

Issued Every Month

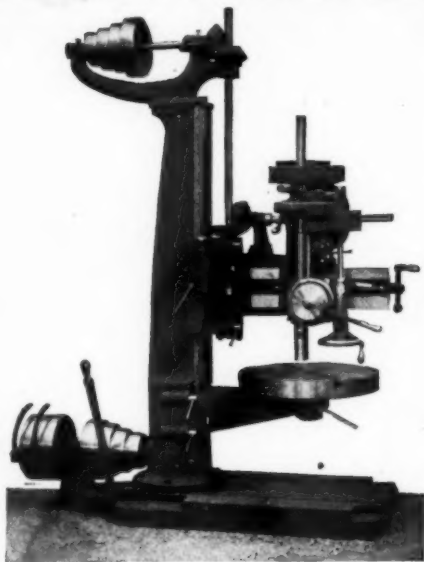
For Free Distribution to Users
of Machine Tools

**HITCHCOCK'S
MACHINE
TOOL LIST**

A Reference Book for Buyers
of Iron Working Machinery

Published by
A. H. HITCHCOCK
1220-1235 Caxton Building
Chicago

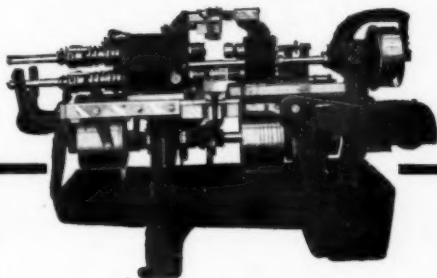
Fosdick 2-ft. Radial Drill



INVESTIGATE, and see how much faster your drilling can be done on this Radial than on an upright. It is easier and quicker to change for different work, and also handles large work to better advantage. This size drill is indispensable in any shop; and if you will investigate the methods of drilling in your shop, we are positive you will find this Fosdick 2-ft. Radial a money maker.

The Fosdick Machine Tool Co.
Cincinnati, Ohio

Accuracy at Lowest Cost



The Acme Automatic

Screw machine parts that meet your requirements **exactly** will save you real dollars and cents.

You can get them on the Acme Automatic Multiple Spindle Screw Machine; and at the lowest cost per piece.

Thirteen years of successful building and operating has been our experience with the trade, and the method we have perfected is rapid, of low cost in operation, and—most essential—uniformly accurate in results.

Send us your samples and we'll tell you how many you can get by the "Acme Way." When you send the samples ask for "200 Reasons."

The National-Acme Mfg. Co.

Cleveland, Sixth City

New York 77 White St.
Chicago 23 So. Jefferson St.
Boston 141 Milk St.

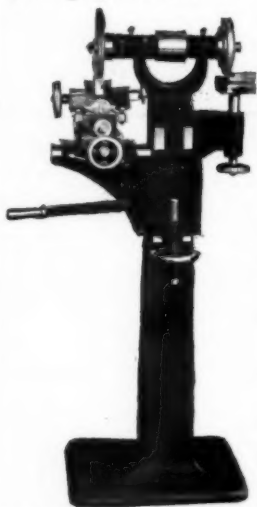
Detroit 1327 Majestic Bldg.
Atlanta 3rd. National Bank Bldg.
Montreal in St. Henri at G. T. R.

Everybody Knows

that good work cannot be done with defective tools.

Do You Know

that improper grinding of Thread Chasers is the cause of most of the trouble in Screw-Cutting operations?



The Geometric Chaser or Die Grinder

keeps the Chasers in perfect condition, grinding each set uniformly. It is impossible to do this by hand.

The Machine will grind any make of Thread Chaser. And is also equipped for ordinary Tool Grinding.

Where good work and economy figure, there the **Geometric Chaser or Die Grinder** will be found.

Send for descriptive Booklet

The Geometric Tool Company
New Haven, Conn.

Garvin Circulars

Frequent changes necessitate issuing circulars from time to time to keep our printed matter up-to-date. The following is a list of circulars, profusely illustrated, describing our latest improvements on the various machines mentioned. If any of these circulars may interest you, we shall be pleased to send you same on request.

We have in preparation a new catalogue, which will include our complete line, and will be ready for distribution shortly.

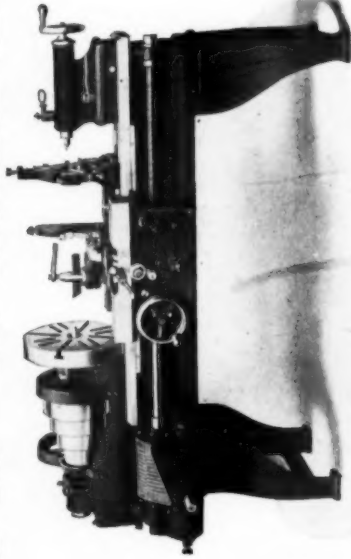
Circular No.	Describing
128	No. 14 Universal Milling Machine.
139	No. 22 Vertical Milling Machine.
140	No. 1 Rapid Screw Slotting Machine.
142	No. 14 & 15 Vertical Spindle Milling Machines.
150	No. 11 & 12 Plain Milling Machines.
152	No. 2 Hole Grinding Machine.
155	Thread Milling Attachment.
156	Automatic Chuck Booklet.
158	No. 9 Index Milling Machine.
159	No. 2-A Universal Milling Machine.
160	No. 3 Screw Machine.
161	Die Slotting Machine.
162	Trolley Wheel Machine.
163	Automatic Chuck & Stop & Open Countershaft.
164	No. 2-A Plain Milling Machine.
165	No. 2 Rapid Screw Slotting Machine.
167	No. 13 & 13½ Plain Milling Machines.
168	Grinding Machines (Cutter & Surface).
170	No. 22 Plain Milling Machine.
171	Motor Driven Machine Tools.
172	No. 15 Plain Milling Machine & 60 in. Feed.
175	No. 2, 2½ & 12½ G. F. H. Screw Machines & No. 22, 22½ & 32½ G. F. H. Monitor Lathes.
176	No. 00 Screw Machine & No. 11, 12 and 12½ Screw Head Shaving Machines.
177	Plain Head Screw Machines and Monitor Lathes.
179	Duplex Horizontal Drills.
180	No. 3-A Plain Milling Machine
181	No. 3-A Universal Milling Machine.
182	No. 21 Plain Milling Machine.
183	No. 1, 2 & 3 Hand Milling Machines.
184	No. 14 Mfg. Plain Milling Machine.
187	Tapping Machines (Auto., Horizontal & Vertical).
188	Friction Pulleys & Countershafts.
189	Turret Indexing Mechanism.
190	No. 2 & 3 Duplex Milling Machines.
191	No. 2 Mfg. Universal Milling Machine.
192	Automatic Oil Grooving Machine.
* 194	Cann or Form Milling Machines.

* In Press.

The Garvin Machine Co.
 Spring and Varick Sts., - New York City

CISCO 14"—16" ENGINE LATHES

All
Gears
Steel
A
Strong
Durable
Efficient
Tool



Have
You
One
In Your
Shop?
Moderate
In
Price

The Cincinnati Iron & Steel Co., Cincinnati, U. S. A.

We Are Still Alive

And Getting Livelier Every Minute

Although we were in the midst of the disastrous flood that recently visited Dayton, we are thankful to find that our shop equipment was not badly damaged. We'll soon be turning out

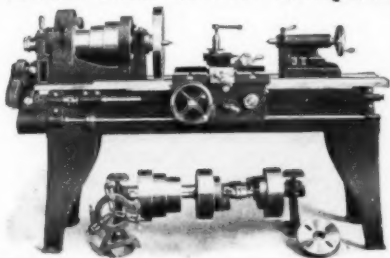
Conover-Overkamp Lathes

as of yore, and expect to make them better than ever. We assure you that we shall appreciate the opportunity to bid on your lathe requirements.

The Conover-Overkamp Machine & Tool Co.

840 Germantown St., Dayton, Ohio, U. S. A.

A Lathe That Invites Comparison



15-in., with 17-in. Swing, 3 or 4 Step Cone

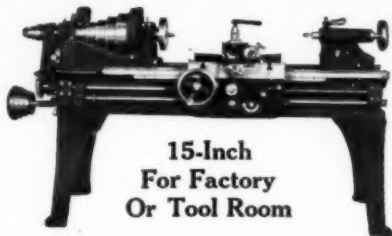
With 27 years' experience in lathe building, we invite comparison of our latest production with other high-grade lathes, in power, accuracy, rigidity, and in those many refinements and conveniences that mean so much in modern lathe service.

We shall be glad to post you. Will you write?

L. ROBBINS MACHINE CO.,

Worcester, Mass.

A Highly Accurate Lathe



**15-Inch
For Factory
Or Tool Room**

A heavy, sturdy tool that makes good in tool room or factory, on account of its accuracy and its ability to take heavy cuts without chatter. A strictly modern lathe that combines efficiency and price in a way that is very satisfactory to the buyer.

We shall be very glad to post you fully. Will you write?

Rockford Tool Co. Harrison Ave. & 11th St.
Rockford, Ill.

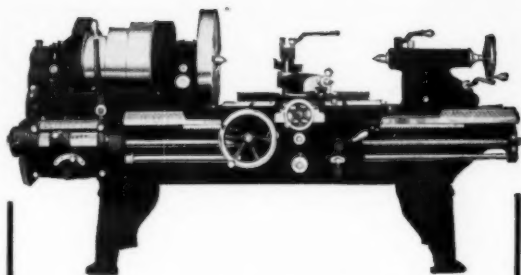
Von Wyck 16-in. D. B. G. Lathe With Patent All Gear Feed



15 Feed Changes

instantly obtainable by the operator without moving from his position. This is a handy feature on a high-grade, powerful, rigid tool, adapted to the heavy cuts of high speed steel without chatter or vibration. The 3-step cone is of large diameter, to carry a 3-in. double belt. A special-merit lathe that you should know about. Will you write?

THE VON WYCK MACHINE TOOL CO., Cincinnati, O.

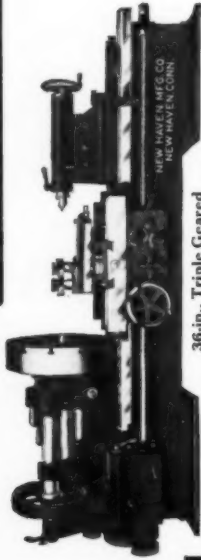


Semi-Steel Lathe Beds and our improved form of compensating vee are two distinct steps in advance of practice. The compensating vee resists the tool thrust in all directions and provides unusual rigidity.

The steel mixture reduces wear and depreciation.

The highest quality lathe work can only be done on a lathe of this character.

The R. K. LeBlond M. T. Co.
Cincinnati, Ohio



36-in., Triple Geared

18-in. to 65-in. Swing
8-ft. to 36-ft. Bed
Single Back Gear
Double Back Gear
Belt or Motor Drive
WHICH?

New Haven Modern Lathes Are Highly Accurate

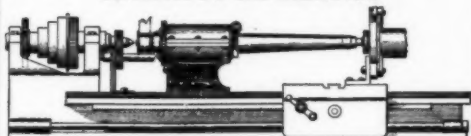
AN EXPERT MECHANIC can tell pretty well, upon inspection, whether a lathe will answer his purpose, except in the one important matter of accuracy. Yet it is about as difficult to do accurate work on an inaccurate tool as it is for a man with a gentlemanly jag to walk in a straight line.

TO INSURE ACCURACY in New Havens, all bearing surfaces are hand-scraped and all bearings and important fits are finished to size by grinding. Each lathe is run and tested under conditions identical with actual practice. The tests for boring, alignment of head and tailstock spindles, alignment of centers, and for facing on large and small face plates, are made by experts with special fixtures and micrometers. Before a lathe leaves our shops it must be accurate to the highest degree that is mechanically possible, and it has behind it the New Haven Guaranty and our reputation of over 60 years.

New Haven Manufacturing Co., - New Haven, Conn.

The Gooding & Stone Bros. Cylinder Grinder

At About 1-3 The Usual Price



Rigid, rapid, simple, can't heat or vibrate; taper boxes, run in oil.

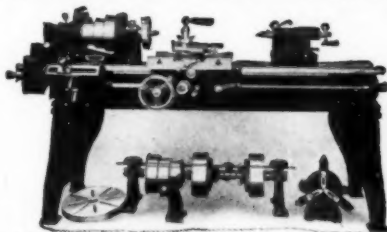
Orbital motion at grinding end, pulley at dead center. Outside and inside shaft each one piece.

Can't get out of adjustment; absolute to .0005; 1-32" in one cut; 20" cut in 20 minutes; cylinder chucked in 3 minutes. Lathe attachment or independent machine; fits any lathe.

Your dealer or

Enterprise Machinery Co., 521 Monroe St.
CHICAGO

One Handle and Knob Control 32 Changes of Feed and Threads without Removing a Gear



14' Double Back Geared, 15 1/4' Swing

Indexed to cut threads 3 to 32 to the inch; feeds, 20 to 200. Accurate to .001 of an inch. High grade throughout.

Write for description of this handy modern lathe

The Carroll & Jamieson Machine Tool Co., Batavia, O.

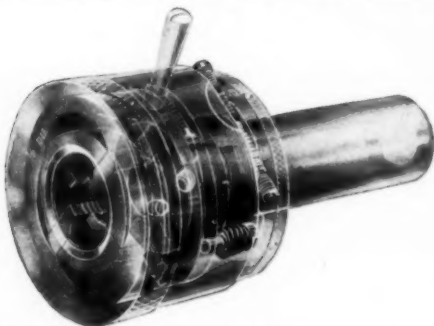
Are you using the most improved Type of Automatic Threading Die? If not, get in line and use

New Model Type A

Ideal Opening Die

Simple construction—Few Parts—and impossible to get tapered thread

Let us know your wants. Write for information regarding Die.



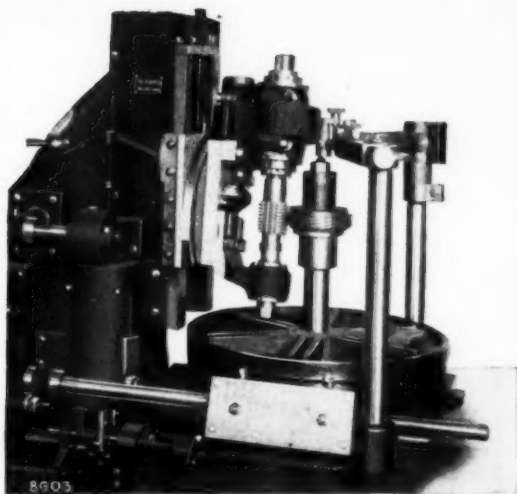
This Die does not depend on any springs for opening. As soon as Clutch is disengaged the cutting strain opens Die.

*Sing a song of Die-heads,
Ours is up-to-date;
Half a dozen pieces
Is its aggregate.
When the Die is opened,
It works without a spring;
Chasers cut a perfect thread,
As slick as anything.*

Manufactured By

The Ideal Tool & Mfg. Co.

Office and Factory, BEAVER FALLS, PA.



Cutting an 80° Spiral Gear on the No. 4 Farwell Hobber—

This is an extreme angle but the Farwell handles it without trouble.

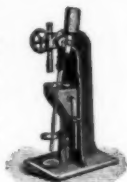
You can cut any pair of spirals, at any angle, both gears on the same machine and both cut with the same hob—a six pitch spur gear hob cuts six pitch spiral gears either right or left hand.

Ask for Circular 811-H

The Adams Co., 923 Hamilton Street,
Dubuque, Iowa.



*The man who thinks
he can make a success
of his business without
using anybody's ideas
but his own is little bet-
ter than the man who
thinks he knows it all.*

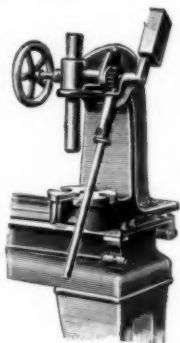


The machine shops that had

Greenerd Arbor Presses

fifteen years ago were owned by either hard headed,
far sighted, and practical men, or by those who were
influenced by such men.

Made
in
14
Sizes



Sold
by
All
Dealers

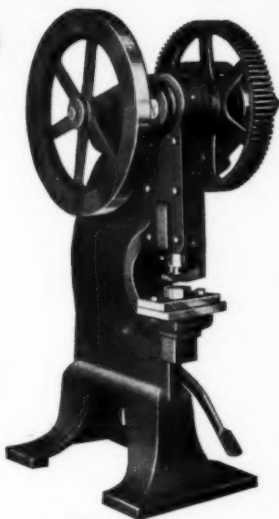
Greenerd Arbor Presses

have worked a revolution in civilizing machine shops.
The day of "*bang* and *hammer*" is passed in nearly all
machine shops.

Manufactured by

EDWIN E. BARTLETT, 336 A St., Boston

Whitcomb No. 5 Power Punch



Four Sizes
From $\frac{1}{4}$ " in $\frac{1}{4}$ "
To $\frac{5}{8}$ " in $\frac{5}{8}$ "

One of the new Whitcomb Line of Punches and Shears

Immediate Delivery on

No. 1 Hand Shears
No. 2 " "
No. 3 " "
No. 4 " "
No. 5 " "

In One Week

Hand and Power Shears

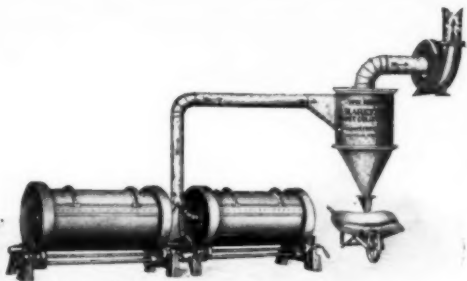
In Two Weeks

Power Shears

Modern Lathes and Planers

We invite your inquiry

Whitcomb-Blaisdell Machine Tool Co.
Worcester, Mass., U. S. A.



We Take Your Dust

Not from your motor car, but from your emery wheels, polishers, tumbling mills, sand blasts, or wherever it is created in any of your processes, with the Morse Rarefied Air System, which is not only the most scientific, but the most practical method of dust collecting. The air is **drawn** through the collector, **not pushed** through in the old-fashioned way. The result is that it is freed from dust before it reaches the fan, and the latter is not worn out by the abrasion of fast-moving particles of grit and sand. This means greater effectiveness, because the dust travels directly from the point of origin to the collector; it means a big economy in fans, which instead of wearing out rapidly, last indefinitely. Interchangeable parts in the collector itself permits the easy renewal of those subject to wear, so that the maintenance of the entire system at its maximum efficiency is at once simple and inexpensive.

Its merits have secured the installation of the Morse system in the best plants in the country, of which a few are listed on the opposite page. Any of these manufacturers will tell you what good work it is doing.

*An Interesting Treatise on Dust Collecting
Free on Request*

The Knickerbocker Co

Allis
Ames
Ames
Buck
Buick
Burgess
Cadillac
Cram
Delaware
General
General
Gray
Gurley
Fort
Hazen
Illinois
Ingersoll
Inter
James
Johns
Kewanee
Lewiston
Lanyon
Lord
Louis
Mallen
Morris
New
North
National
Oliver
Oberlin
Pierce
Pittsburgh
Penn
Stand
Stand
The S
Swift &
Swift &
U. S. I
U. S. I
Victor
Wanam
Weston
Willis
Warren

A Few Users of the Morse Rarefied Dust Collecting System

Allis-Chalmers Co.,	West Allis, Wis.
American Blower Co., (2),	Detroit, Mich.
American Brake Shoe & Foundry Co.,	Maywood, Ill.
Buckeye Engine Co.,	Salem, O.
Buick Motor Co., (4),	Flint, Mich.
Burgess Sulphite Fiber Co.,	Berlin, N. H.
Cadillac Motor Car Co.,	Detroit, Mich.
Crane Co.,	Chicago, Ill.
Delaware, Lackawanna & Western Ry.,	Scranton, Pa.
General Electric Co., (6),	Schenectady, N. Y.
General Electric Co.,	Erie, Pa.
Gray & Dudley Hardware Co.,	Nashville, Tenn.
Gurley, W. & L. E.,	Troy, N. Y.
Fort Wayne Electric Works,	Fort Wayne, Ind.
Hazard Mfg. Co.,	Wilkesbarre, Pa.
Illinois Malleable Iron Co., (2),	Chicago, Ill.
Ingersoll-Rand Co.,	Athens, Pa.
International Harvester Co.,	Akron, O.
Janesville Machine Co., (2),	Janesville, Wis.
Johnson Service Co.,	Milwaukee, Wis.
Kewanee Boiler Co., (2),	Kewanee, Ill.
Lewis Spring & Axle Co.,	Jackson, Mich.
Lanyon Zinc & Acid Co., Robt.,	Hillsboro, Ill.
Lord & Burnham,	Irrington, N. Y.
Louisville Lighting Co.,	Louisville, Ky.
Malleable Iron Fittings Co.,	Branford, Conn.
Morrow Mfg. Co.,	Elmira, N. Y.
New York & Penn. Co.,	Johnsonburg, Pa.
Northern Pacific Co.,	Brainerd, Minn.
National Screw & Tack Co.,	Cleveland, O.
Oliver Chilled Plow Works, (6),	South Bend, Ind.
Oberdorfer Brass Co., M. L., (3),	Syracuse, N. Y.
Pierce Arrow Motor Car Co.,	Buffalo, N. Y.
Pittsburg Valve & Foundry Supply Co.,	Pittsburg, Pa.
Pennsylvania Salt Mfg. Co.,	Wyandotte, Mich.
Standard Oil Co.,	Constable Hook, N. J.
Standard Oil Co.,	Bayonne, N. J.
The Studebaker Corporation,	South Bend, Ind.
Swift & Co.,	Chicago, Ill.
Swift & Co.,	Harvey, La.
U. S. Navy Yards,	Charleston, S. C.
U. S. Navy Yards,	Norfolk, Va.
Victor Talking Machine Co.,	Camden, N. J.
Wanamaker, John, (3),	Philadelphia, Pa.
Weston-Mott Co., (8),	Flint, Mich.
Willis-Overland Co., (3),	Toledo, O.
Warren & Co. S. D.,	Cumberland Mills, Me.

C Jackson, Michigan

What do You Drill— *and how?*

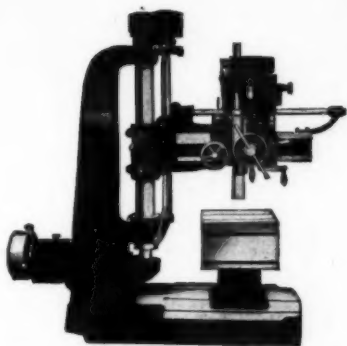
The T. & F. 3-foot High Speed Radial effects a big saving drilling small holes in large work



YOU KNOW what a tremendous advantage it is to have exactly the right man or machine for a certain kind of work. The T. & F. is a remarkably efficient and profitable tool for drilling holes up to $\frac{3}{4}$ -in. in work too large for a vertical to handle economically. It combines the flexibility of the radial with the convenience and big output of the sensitive—a combination that means money for the user.

Let us give you the full How and Why—it's a story too big for this space—but far too important for you to miss. Forward your name and we'll forward the facts.

The Taylor & Fenn Company
Hartford, Conn.



The "Morris" Plain Radial Drill

Is a general purpose drilling machine made to do your work in an accurate, dependable manner. Of a rigid, strong construction, priced at reasonable figures, it is the best radial drill proposition on the market.

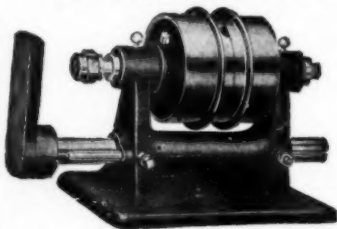
Its many points of merit are fully given in our descriptive matter. Write for our proposition. It will interest you and is worth going over. The machine is made with cone drive, speed box drive, or can be arranged for motor drive.

The John B. Morris Machine Tool Co.
Cincinnati, Ohio

Makers also of the SUPERIOR MORRIS Engine Lathes

Burke's Tapping Machines

Are Rapid, Accurate and Convenient



Made in
several
sizes
for
tapping
up to
1/2-inch

These tappers are built throughout with a good deal more than usual care, and you will be glad to know about them. If you will mail us your address, we shall be pleased to send full description and quote close prices.

The Burke Machine Tool Co.
Conneaut, Ohio

KEYSEATER

For Your



DRILL PRESS

We make them in 20 sizes

Ask for booklet



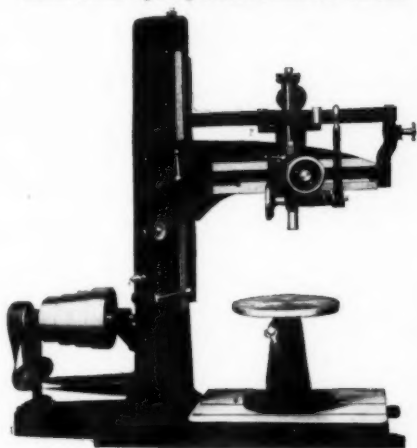
Bushing for different diameters

National Machine Tool Co.

2270 Spring Grove Ave., Cincinnati, Ohio

The Gang is Supreme In Lowering Drilling Costs

Because it's a well-thought-out and carefully constructed "speedy-belted-sensitive" Radial



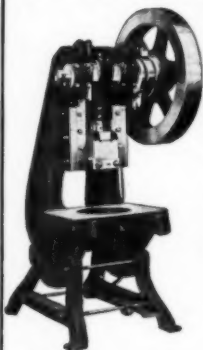
Besides saving time in getting material and the tool in position, it drills faster than any machine of its kind today. You don't know real drilling economy unless you have this belt driven Gang on the job.

Spindle speeds from 300 to 1170. Distance base to spindle, from only 11 in. up to 51 in. Taps up to $\frac{3}{4}$ -in.; reverses instantly at high speed, without shock or jar. Special imported annular ball bearings thruout.

From first to last, a cost reducer. Investigate now.

The William E. Gang Co.
Cincinnati, Ohio

Your Problem Today



is to increase output and lower production costs.

HIGH DUTY
ROCKFORD
PUNCH PRESSES

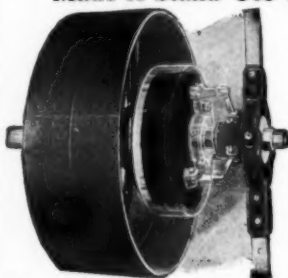
will show you. Power requirements cut **one-half** and the speed increased. Which means more work with less expense.

Write today for catalog

Rockford Iron Wks.
ROCKFORD, ILL.

The Edgemont Plate Clutch

Made to Stand Use and Abuse



Dust and Dirt don't bother it any —wearing parts are fully protected.

No Oil or other attention of friction mechanism required.

Catalog D. shows the Edgemont line. We make regular and special clutches for all transmission purposes. Put your clutch problem up to experts.

The Edgemont Machine Co.

National Ave. & Neibert St., Dayton, O.

Riveting Costs Reduced From 60% to 95%



It's the Electric Way

This boy is welding angle iron to galvanized sheets, for heavy doors. No holes to punch, no rivets used. Cheaper, quicker and neater than riveting.

We have a 30 days' free trial proposition, and our bulletin No. 12 tells how to save money if you do any riveting. No. 11 bulletin tells all about butt welders.

No Lease

No License

No Royalty

The Toledo Electric Welder Co.

Station A., Cincinnati, Ohio

A New Gas Babbitt Melter

Supplied complete with legs and shelf, which permits placing anywhere convenient to gas and air supply



Made in two sizes

No. 1-L

Capacity, 200 lbs.

Price, \$30.00

No. 2-L

Capacity, 50 lbs.

Price, \$16.00

These prices are net
F. O. B. Rochester.

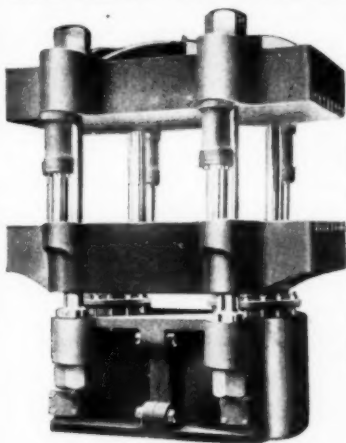
No. 2-L can be furnished with burner for use without air pressure if required.

No shop is really complete without one of these handy, economical Melters. Tickles the men, too, for they can do their work quicker and better. Get in line by ordering one today.

The W. P. Davis Machine Company

Builders of Lathes, Chucking and Cutting-off Machines, and Keyseaters
Rochester, N. Y.

A PRESS WITH A PURPOSE



It's bound to have a purpose and to completely fulfil it, for it's a Mount Gilead Hydraulic Press; that's the only kind of Hydraulic Presses that come out of Mount Gilead. Every one of them is backed by 36 years of knowing how and making good. They are built

"For your Pressing Needs."

Special Flanging Press for Heavy Work

Mount Gilead Hydraulic Presses and Pumps

Standard Hydraulic Wheel, Bending, Forcing, Extracting, Baling, Powder and Veneer Presses; Intensifiers, Accumulators and Hydraulic Pumps.

Our engineers are trained men. They can solve any pressing problem. Their service is yours for the asking.

Tell us your problem.

Send for the catalog.

The Hydraulic Press Manufacturing Co.

72 Lincoln Ave., Mount Gilead, Ohio

Eastern Office:—Rm. 1105 Z, 39-41 Cortlandt St., New York City

Chicago Office:—164N. Clinton St.



Wear-Ever Sockets

Outlast a dozen of any other kind. Made of a special steel especially adapted to drill sockets, heat treated, hardened and ground. Increased diameter at base also adds strength and prevents flaring.

No twisting of tang is possible with the "Wear-Ever" positive drive.

Old drills can be used up to the best advantage in the "Wear-Ever." The inner flat is the secret. It is the work of only a moment to **grind a flat** or mill a key on the drill shank.

*Ask your dealer, or
Write us for description and prices.*

Scully-Jones & Co.

351 Railway Exchange, Chicago, Ill.



The "M.E.C." Collapsible Tap Makes Good

Its unique construction makes possible a uniformity in diameter of thread regardless of number pieces run.

Form of chasers used preclude any possibility of "TAP" becoming impregnated with chips. Can be ground on end and kept in proper condition for bottoming.

Our rapidly operating Aero Chucks

will increase your production from thirty to fifty per cent.

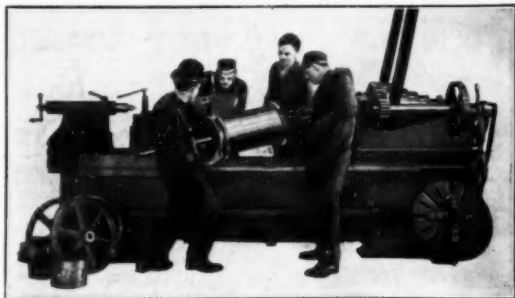
We are also builders of **Special Cost Reducing Tools** for manufacturing brass and iron goods.

*For further information
ask your dealer or
write us direct*

Manufacturers Equipment Co.

171 N. Jefferson St., Chicago, Ill.

No, Mr. Shop Owner,
This is not an Ice Wagon without Tongs



It's merely a shop without

"The Handiest Tool in the Shop"
Portable Floor Crane and Hoist

which bears about the same relation to the shop, in both utility and low proportionate cost, as does an iceman's tongs to the rest of his equipment.

It
saves
its price
over and
over
again
every
year



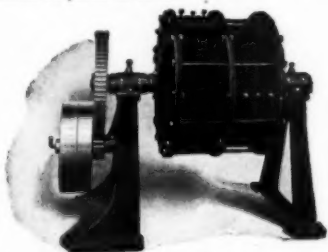
Write for
Booklet
"E-8"
showing
several
styles
and
sizes

The Canton Foundry & Machine Co.
Canton, Ohio

• • • • •

Compare the Cost of Burnishing Small Metal Articles

with hand polishing or buffing machines and by the Abbott Steel Ball process. In the first case, each machine requires an operator, who polishes one piece at a time, while one man can easily attend to several Abbott Burnishing Barrels and each barrel burnishes thousands of pieces at once.



The Abbott Burnishing Barrel

Is narrow and of large diameter. In operation it is half full of steel balls, weighing several hundred pounds, which work into a high pile and, in sliding down, bring weight and friction upon the work. Each ball is an individual burnishing tool, and thousands are working at once. This is Steel Ball Burnishing, of which we are the originators.

We have been sending Abbott Barrels and Abbott Balls to responsible concerns on approval for over three years. In most cases we receive a check before the approval time expires.

Write for free booklet and send samples for burnishing

The Abbott Ball Company
Elmwood District Hartford, Conn.

• • • • •

RELIANCE ADJUSTABLE SPEED MOTOR



You who know the many advantages of motor-drive will want this added time saver:

Automatic start and dynamic brake

Press a button or throw a switch and the motor starts. A light load is started quickly, a heavy load more slowly—but remember all loads are started in the *shortest safe time*. The responsibility of correct starting is taken off the operator and put on the starter.

No time is lost. After one simple, quick movement the operator's attention is on his work. There is no slow movement of a starter handle and no chance of injury to starter or motor because of too rapid manipulation.

An even greater saving is effected by automatic dynamic braking on machines having heavy moving parts like lathes, shapers and boring mills. Pressing the "stop" button or throwing the switch handle to the "brake" position brings the motor to rest quickly. There is no time lost waiting for the machine to slow down. As in starting, it is all automatic. The motor is stopped in the *shortest safe time*. There are no undue strains on the starter, motor or driven machine.

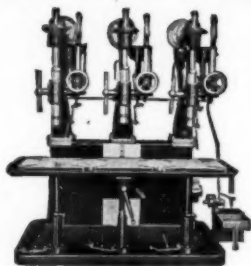
You can have these time saving features in their simplest form combined with really accurate speed adjustments over wide ranges if your machines are equipped with Reliance Adjustable Speed Motors.



*For details ask for
Folder 10L.*

**RELIANCE ELECTRIC & ENGINEERING CO.
1050 IVANHOE RD. • CLEVELAND, O.**

Rockford Gangs



They not only drill, but they bore, ream, tap and face without removing work from jig.

Write for descriptive matter

Rockford Drilling Machine Company
Rockford, Ill., U. S. A.

Mechanics' Line

Standard Uprights: The cut shows our popular 14-in. belt-driven drill, which will do 50 per cent of the work usually done on a 20-in. drill—faster and easier. We make 20, 23, 24, 26, 28, 32 and 36-in. heavy uprights, with all variations.

Gang Drills: with 2, 3, 4, 5 and 6 spindles, box or single column, with or without oil pumps.

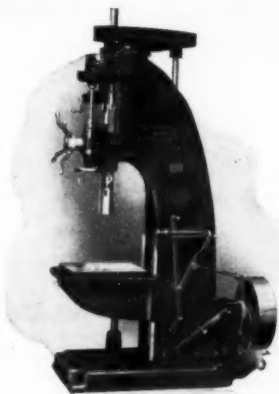
Friction Drills: No. 1 and No. 2 and friction bench drills.

*Write for Catalog and Prices
on the "Mechanics' Line"*



MECHANICS' MACHINE CO.,

Rockford, Ill.



Foote-Burt High Duty Drills

For drilling with High Speed Drills to their full cutting edge capacity. Its strong, rigid construction is clearly shown in cut. Spur gears are used entirely, except one pair of 2 to 1 bevel gears, and everything is driven in a straight line with the result that practically all power is transmitted directly to drill point.

Built in seven sizes with capacity from $1\frac{1}{4}$ to $3\frac{1}{2}$ in. and swings from 20 to 60 in. From this list of sizes the right size machine is obtainable which is best adapted for certain work.

For details write us

The Foote-Burt Co., Makers
Cleveland, Ohio

Hand wheel for securing belt tension.

Location of spindle drive.

Oil protector spindle drive.

Rack adjusting lar and nut.

Rack stop adjusting screw

New rack stop

Thrust bearing with highest German ball dust protector

Patented slide handle.

Portion of system.

Guard to prevent chips and work from entering the ways.

Table locking handle.

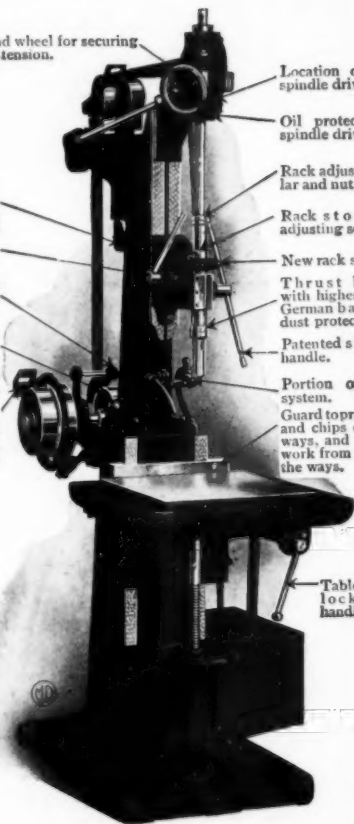
Cam lever for raising or lowering idler pulley bracket

Patented spindle arm clamp.

Guide to keep belt in position when changing speeds.

Rear shaft pulley with new automatic lock allowing the pulley to be shifted by hand without a wrench.

New shifter, shifting belt from any degree of the circle surrounding the drive pulley.



New Model Class B Henry & Wright's Latest Improvement in Ball Bearing Drilling Machines

Indicated details in the engraving opposite show a few of the points wherein this new machine is an improvement on the older type; but as a matter of fact there is no important feature which does not show changes which are the results of careful study and skillful designing. The improvements are practical, made for the purpose of increasing the working effectiveness of the machine, and were embodied in the new model only after tests which went far beyond the requirements of the most exacting service.

Both Classes B and C Machines—the latter with modified base and table—are proving in actual service that they have brought to the manufacturer whose work requires sensitive drilling—holes $\frac{3}{4}$ inch and under—new opportunities to save money. They are so much easier to operate, and cut off so many odd seconds in placing and removing the work as well as in the drilling operation itself, that their output record shows a marked and most profitable gain over anything previously possible in this line.

It pays us to produce the fastest and most economical drilling machines we can make; please don't forget that one of them will save more money for you than it will make for us.

*If you are an economist in production costs
we would like to hear from you*

The Henry & Wright Mfg. Co.
760 Windsor St., Hartford, Conn.

Silver's 20" Drills

Eight Styles

LEVER FEED

LEVER and WHEEL FEED

POWER FEED and Automatic
Stop

POWER FEED with Back Gears
and Automatic Stop

Round or Square Base

Send for catalog



Fig.
858

The Silver Mfg. Co., 385 Broadway
SALEM, OHIO



No. 27

\$41.00

For This

Bench Drill

with chuck, countershaft, and
foot lever.

**Six Speeds
Belt Tighteners**

A new line of Bench Drills,
foot lever and column.

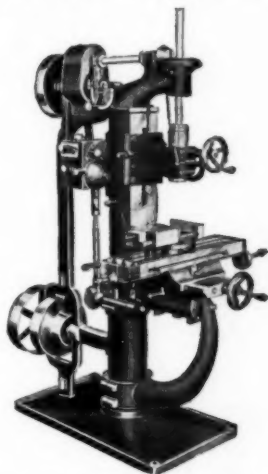
Send for circular

Reed Drill Company

43 Hammond St., Worcester, Mass.

The Value of an Expert

An expert, all-around mechanic is of great value, and so is a machine that mills, bores and drills with the facility of separate machines



THE KNIGHT No. 2 Milling and Drilling Machine has such great convenience, such unusual adaptability and capacity, as to equal two or three ordinary machines. This is proven by the fact that it saves from 20 to 50% of time on all kinds of difficult tool room work, including dies, jigs, metal patterns and moulds.

The profitable services of this "expert" are to be had for practically the same price as a less serviceable tool. Write us today.

W. B. Knight Machinery Co.
St. Louis, Mo.

14-Inch Sensitive Drill

For Particular People

An accurate, high-grade drill press that is unusually efficient and convenient, with forged and ground high carbon steel spindle and ball bearing thrust. The upper table, which swings around column, has bracket for angular drilling, also stop pin or locking bolt. The lower table is adjustable vertically and interchanges with combination centering device—three centers in one. Vertical adjustment of lower cone provides for taking up slackness of belt.



Write for special circular

ROCKFORD LATHE & DRILL CO., - Rockford, Ill.



Myers Bench Drill

Ball Bearing Thrust
Swivel Table
Two Speeds
Countershaft attached
8" Chuck fitted to spindle
Steel pinion
Drills to center of 10 1/2"
Weight, crated, 80 lbs.

FULLY GUARANTEED

Priced lower than any
other drill of its size

*See them at your own
dealer's store, or address*

Myers Machine Tool Co., Columbia, Pa.
Philadelphia, Pa., Office & Salesroom, 249 N. Third St.



More Money For You

You know that High-Efficiency Shops figure "Costs" and "Efficiency" to the smallest fraction. A Department of Tests is maintained and every purchase is subjected to the most rigid tests.

A large Auto Parts Factory in the Middle West, where requirements are most exacting, conducted a series of experiments to that end.

As a result

"Detroit" Twist Drills

are now specified exclusively in that plant. In many other plants where the expenditures for Drills and Reamers amounts to thousands of dollars yearly, "Detroit" Drills have developed an efficiency so high as to exclude the use of any other make.

In such factories the little leaks as well as the big ones are watched with painstaking care. And only those tools which actually demonstrate to expert judges that they combine the utmost in service with the greatest wearing qualities, are specified.

"Detroit" Tools speed the productiveness of both men and machines. In competitive tests they prove their superiority.

**Their use means money for you.
Write for Catalog "J" today.**

DETROIT TWIST DRILL COMPANY

Improving Twist Drills Since 1886

510-522 Fort Street, DETROIT

1926 Wabash Ave.
Chicago

30 Church St.
New York

633 Market St.
Philadelphia

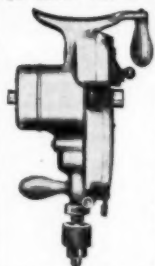


350

There Is No Other Way

to find out how a Temco Model B Drill is sure to give satisfaction

but to try one



It is not only the best suited for drilling in all kinds of material, but tapping as well; and with the Emery Wheel Attachment, it may be used for sharpening drills and tools without leaving your work.

Let us figure on your requirements, if it is only for one drill. Try one and you will want more. **Ask for a Catalog.**

The Temco Electric Motor Co., 55 Sugar Street, LEIPSIC, OHIO



**Burke Quality
Excels on
Fine Points**

To get the
Burke

quality, be sure that the name and address (Conneaut, O.) are cast on the frame of the machine.

For Sale Everywhere



Electric Air Cooled Drills

Are Best by Test

Are You Still Paying Two
or three prices for a job
just because you have al-
ways done so



The fact that the U. S.
Government tests prove they
are superior in every respect
should be convincing evidence
to all users of this type of tool.

Aside From This

there's the evidence of thousands of users all over the United
States. Would they use them if they were not the best? Hardly.

Want a Catalogue? A Postal will bring it.

We use aluminum for Casing on all Drills to cut down weight
Power from any Lamp Socket

SENT ON TRIAL ANYWHERE

*Made for alternating or direct current
Just attach it to your nearest lamp socket*

**The United States Electrical Tool Co.
Cincinnati, Ohio**

NEW YORK, 50 Church St.

BOSTON, 12 Pearl St.

CHICAGO, 8 E. Michigan St.

PHILADELPHIA, Heed Bldg., No. 1211 Filbert St.

Economy In Storage Space

Terrell Steel Fixtures Save Room by Using it to Advantage

Besides the safety and durability of steel, the Terrell Interchangeable Unit System gives you the largest storage capacity in the space occupied, because it utilizes every bit of it. Shelves and bins are adapted in size to the material for which they are to be used, and if at any time more or less room is needed, expansion and contraction are equally simple and easy. Any handy man around the place will quickly make the changes.

The advantage of having material compactly stored and readily accessible means so much time and labor saved in handling, both in and out, that you can safely figure a substantial return on the cost in this alone. Adding the direct gain in lessened insurance expense, and in the greatly decreased fire risk, it becomes apparent that Terrell Steel Equipment is more than a protection and a convenience—it is a real money earner.



Improved Steel Lockers—Sanitary, Secure, Satisfactory

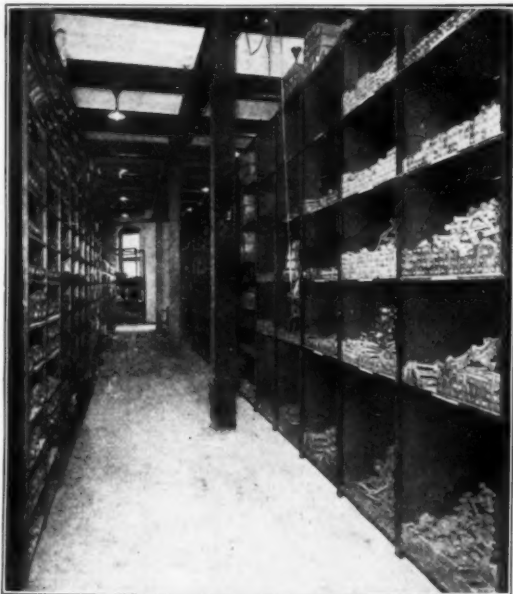
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The First Cost Objection

is greater in imagination than in reality. Let us put it into figures for you, so you can see how small it really is. We shall be glad to give the information, and your asking for it places you under no obligation.

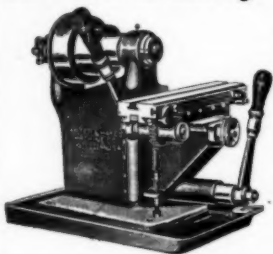
*We have Interesting Catalogues of both Fixtures and Lockers
They will well repay the trouble of writing for them*

ctory

Terrell's Equipment Company

Hall & Division Sts., Grand Rapids, Mich.

It's A Dandy



Above remark entirely unsolicited by one of our recent (new) customers.

You get with this **Bench Miller** a two speed friction countershaft and our **No. 1 Quick Operating** lever vise.

Send for Circular

The Carter & Hakes Co. **West Winsted, Conn., U. S. A.**

AGENTS—Marshall & Huschart Mchry. Co., Chicago, St. Louis, Indianapolis; Mott & Merryweather Mchry. Co., Cleveland, Detroit, Cincinnati, Pittsburg.



Burke's No. 3 **Bench Millers** **Are Seasoned Tools**

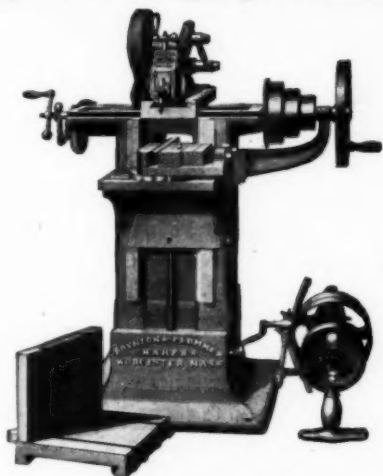
Our system of tests insures accuracy, and our methods of construction make it permanent. Frames and parts are carried 6 to 8 months, after work begins on them, before the completed tools receive our final O. K., and all parts are finished and fitted with exceptional care.

Longitudinal feed, 6 in.; traverse feed, $3\frac{1}{2}$ in.; vertical motion of knee, $8\frac{1}{2}$ in.; table surface, $3\frac{1}{2} \times 12$ inch.

Write for Catalog, which also shows larger and smaller sizes.

The Burke Machine Tool Co. **Conneaut, Ohio**

Improved Shaping Machines



6x9, 8x12 and 10x15-in. Shapers

These modern tools are particularly desirable for tool makers, die sinkers, railroad, repair and other shops where there is much short work to be done by filing or planing. They are great labor savers, and for many purposes are preferable to the much more expensive large planer.

SPECIAL

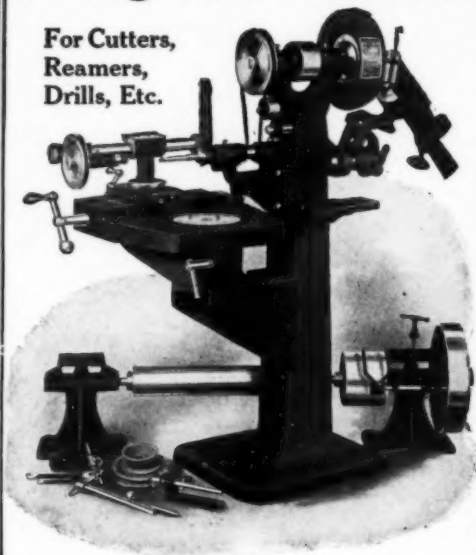
The 6x9-inch shaper, length of traverse 14 inches, with countershaft and swivel chuck, **\$160.** including plain chuck 14 inches long,

Write for Shaper Catalog, also separate Catalog of Post Drills, Bolt Cutters, Bending Machinery and Nut Tappers.

Boynton & Plummer, Inc.,
Worcester, Mass.

A Big Value Grinder

For Cutters,
Reamers,
Drills, Etc.



It will do all the cutter, reamer and drill grinding required by ordinary shops. It has big capacity, wide range and does accurate work.

Sells For About Half

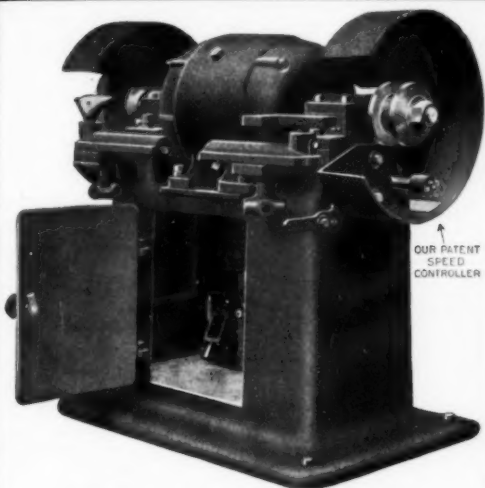
the price of most universal grinders. If you haven't a grinder, here is

One You Can Afford

to buy, and you can't afford to be without one. For further information just say "BX Circular."

Wilmarth & Morman Co.

1185 Monroe Ave., Grand Rapids, Mich.



The Patent Speed Controller on the
Ransom Motor Driven Grinder
Insures Maximum Efficiency All the Time

On any other emery grinder there's a loss in efficiency as soon as the grinding wheel begins to wear down, and the more the wear the greater the loss.

On the other hand, with the Ransom Grinder, equipped with Patent Speed Controller, the grinding efficiency remains constant. The speed of the motor is automatically regulated to maintain the same periphery speed in the grinding wheel, irrespective of its size—never too fast for safety, but always right for results.

Free Bulletin No. 9 describes all sizes

Ransom Manufacturing Company
Oshkosh, Wis.



Emery Grinders

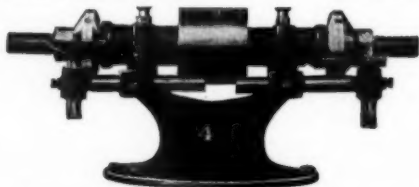
Better Ones for Your Money

They look like others, but are different in details of design and construction. Built like machine tools, with the arbors and collars accurately turned and balanced, and properly lubricated and protected against dust. They run easier, last longer and give better service. Made in quantities sufficient to keep down manufacturing costs, and the price. I can interest you in Bench, Column, and Cabinet Grinders, Foot Presses and Bench Tapping Machines. *Write me.*

E. O. PARTRIDGE

2047-9 Lake Street,

CHICAGO





16-in. and 24-in. Wet Grinders

Regular Features

Self-Oiling Bearings
Self-Oiling Countershaft
Improved Water Control
Norton Wheel.

Special Feature

Temporary Low Price to Reduce
Overstock. Ask for it.

Chicago Machine Tool Co.

127 N. Canal Street,
Chicago, Illinois

The World's Most Popular Disc Grinder



No. 10—18-in. G Besly Grinder

For General Fitting and Finishing, and Manufacturing operations requiring 18 in. diameter disc wheels.

One of the most useful tools known to machine shop practice.

Costs only Six Cents a Day for Interest on Investment.

Ask us for details.

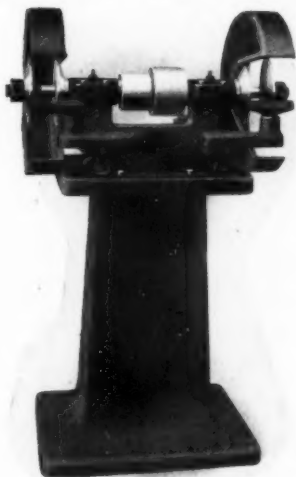
Charles H. Besly & Co.

Chicago, U. S. A.



Registered
Trade Mark

Blount Grinders



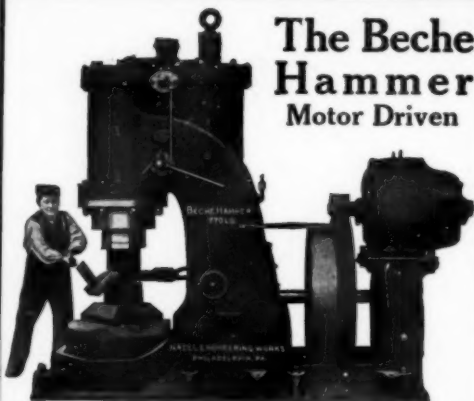
Have been on the market for the past twenty years, and our experience gained in this time is behind each of our machines and will prove useful to all buyers.

Our line of grinders is built in seven sizes, from the No. 1 which takes 8" wheels, to the No. 7 which takes 30" wheels. Cut illustrates No. 5 grinder with wheel guards.

*Ask your dealer about our grinders,
or write for our catalogue No. 14.*

J. G. Blount Company
Everett, Mass.

The Beche Hammer Motor Driven



**The Heaviest, Most Powerful, Efficient
and Economical Hammer of Its
Size on the Market.**

*Hammer and Compressor Combined, No Piston
Rods, Springs, Straps or Cushions.*

Simple—Durable—Reliable

Powerful, non-bounding, squeezing blow. Positive, flexible control. Long stroke. Variable blows at will. No adjustments. Dies at any angle. Belt drive, no countershaft. Motor drive, geared direct.

Sizes and Normal Capacities of Beche Hammers

66 lb.	165 lb.	250 lb.	350 lb.	500 lb.	770 lb.
2" dia.	4" dia.	5" dia.	7" dia.	8" dia.	9" dia.

Write for Catalogue and Prices

Nazel Engineering & Machine Works

Sole Builders for United States and Canada

5th and Luzerne Sts. - - Philadelphia, Pa.

Improved Holders For Lathe and Planer Tools

Free Trial—See Next Page

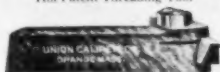
Test them on your hardest work at our risk. The trial will be worth dollars to you in time and labor saved. Tear out this page, check the tools you want, and mail to us; your trial selection will be sent promptly.



Eberhardt Patent Turning Tool



Hill Patent Threading Tool



Hill Offset Side Tool



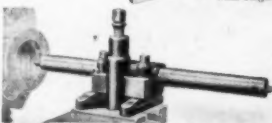
Hill Patent Straight Shank Side Tool



Hill Patent Cutting-off Tool



Hill High Speed Cutting-off Tool



Hill Patent Boring Tool



Hill Offset Side Tool

Union Caliper Co., Orange, Mass.

Try Our Tools—A

**A Special Proposition to Any
Machinist Not Now Using**

Select one or more Tool Holders that you desire. We will ship them to you, *express paid*. Try them in every way you can think of; on *fast speeds* and *heavy cuts* required in modern

We will send them full equipment

Note the saving—all the forging and tapering. Try them sixty days. If they don't make the cost, return them at our expense. The risk is

Our line includes Cutting-off Tools, Borers, Holders, Lathe Dogs, Machine Vises and many more. We show engravings of some of them. We illustrate and describes them all. Pick out one, giving dimensions of the largest shaft you wish to turn, in writing, and they will go out to you by first class mail. No obligation to keep them, unless they prove good.

Union Caliper Company

ls—At Our Expense

o An Responsible Manufacturer or
Now ling Our Tool Holders

ers the you can use in your work, and let us

Try them on the hardest job you have; test
k of; convince yourself that they will stand the
d in modern machine shop practice.

fully equipped, ready for use.

and tapering and 80 per cent of the grinding.

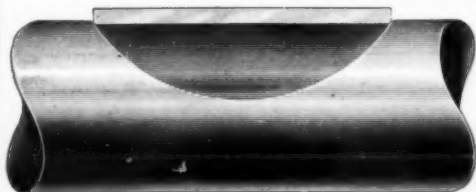
on't like good and save enough to pay their

The risk is all ours.

Tools Boring Tools, Threading Tools, Drill
Vises and Keyseaters. On the preceding page
them. Write for our catalogue, which illus-
k out one, or as many kinds as you wish to try,
shan you can use, mention the Tool List in
ou by first express. You are under no obliga-
ove so good that you don't want to let them go.

Company, Orange, Mass.

"Whitney" Keys and Cutters **For** **"The Woodruff System of Keying"**



No. 16 CUTTER FULL SIZE

"Whitney" Keys are made in 114 different sizes and in three grades as follows:

Regular Carbon Steel Keys
Regular Carbon Steel Keys Case Hardened
Nickel Steel Keys Heat Treated

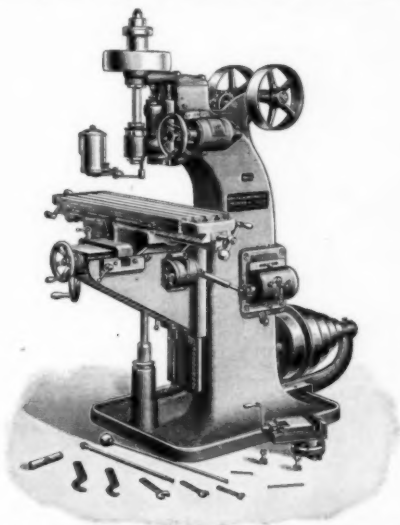
"Whitney" Cutters are furnished in both Carbon Steel and High Speed Steel, so no matter what your requirements, you will find in our line exactly the Key and Cutter to meet your particular conditions.

Catalog No. 10 Gives Full Particulars

The Whitney Manufacturing Co.,
Hartford, Conn.

Manufacturers of Hand Millers, High Grade Driving Chains, Water
Tool Grinders, "The Woodruff System of Keying," Presto
Chucks and Friction Tapping Devices.

Spindle speeds up to 1,000 r. p. m. meet the demands of drilling, die sinking and similar work on this machine.



No. 1 Vertical Spindle Milling Machine

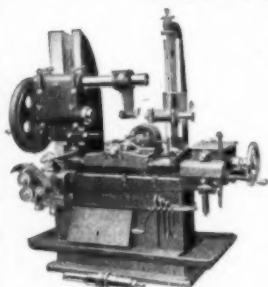
With a High Speed Milling Attachment, a larger variety of much faster speeds are obtainable for work where higher speeds are required. This feature, coupled with the accuracy, simplicity and convenience of this machine, makes it a valuable tool for every shop.

Special circular mailed upon request.

Brown & Sharpe Mfg. Co.
Providence, R. I., U. S. A.

Newark Gear Cutting Machine

Made in All Sizes



For the automatic production of smooth-running gears for all purposes.

Simple in construction, positive in operation, with accurate indexing mechanism.

A manufacturing tool, for cutting accurate gears in quantities at a low cost.

Complete Catalog is yours for the asking

Newark Gear Cutting Machine Co.

69 Prospect St., Newark, N. J.

Positive Pressure Blowers and Vacuum Pumps Patented

In all sizes and for all services



**"Built
Like A
Machine
Tool"**

—
Quiet
Durable
Efficient
—

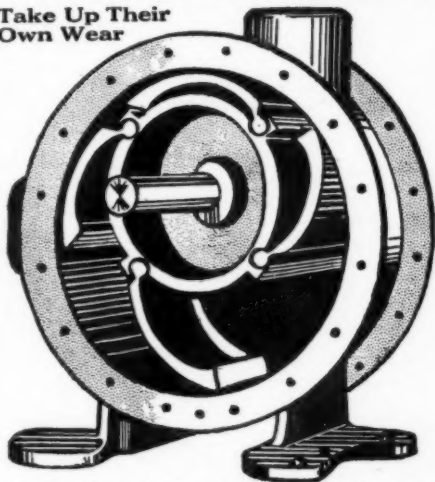
Write for data

THE LEBRAN CO., 940 N. 9th St., Phila., Pa.

LEIMAN BROS. Rotary High Pressure

BLOWERS AND VACUUM PUMPS

**Take Up Their
Own Wear**



for use with all oil, gas and coal burning appliances; for blowing chips from machines, stampings from presses, blowing out dust from motors and machines, agitating liquids, sand blasting, and in connection with automatic machines of many kinds. Also used for

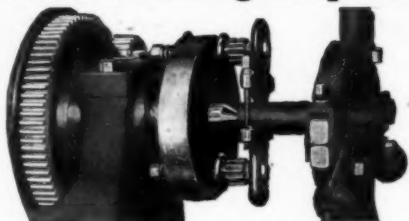
VACUUM CLEANING

Capacities 2 to 338 Cubic feet per minute
1 oz. to 10 lbs. pressure, 1 to 20 inches Vacuum

Blower Catalog No. 26—Vacuum No. 27

LEIMAN BROS., 62 R John Street, N. Y.

No Belt Lacing Required



The Hill Holdback or Faceplate Dog for holding work to the head-center, saves much time to users. To strap each separate piece by the belt lacing method takes about four times longer than the Hill way with its combination of set screw, knurled nuts and springs. Two sizes, \$5. and \$7. each.

The Ready Tool Co., 40 South Avenue,
Bridgeport, Conn.



Are You Tired of Paying Big Bills for High Speed Steel?

ARMSTRONG TOOL HOLDERS

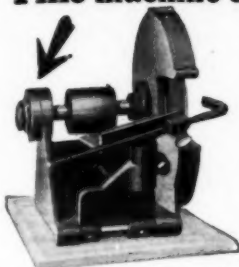
Make 1 lb. of Tool Steel go as far as 10 lbs. in Forged Lathe and Planer Tools.

Write for catalog—It tells other advantages

Armstrong Bros. Tool Co., 308 N. Francisco Ave.
CHICAGO.



This machine saves you money!



If your men cut metal by notching and breaking—the old fashioned way—they are wasting your money!

For cutting High Speed and other

hardened metals, combination metal and wood, taps, drills, reamers, brass and steel tubing, tees, channels, etc., nothing works so satisfactorily, so quickly and so economically as the

Peter Brothers Ball Bearing Abrasive Metal Cutter

Goes through anything

Machine shown, 12-inch size, \$50. Specially designed for shops cutting large quantity of metal. Cuts at any angle up to 45 degrees. Imported ball bearings. Two wheels furnished—8-inch size \$16.50. Adjustable gauge. Cuts square, smooth and accurately.

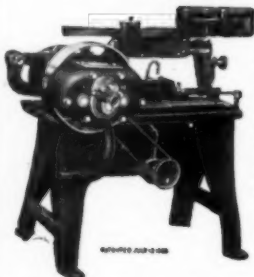
Both machines guaranteed to give satisfaction. Sold by most machinery dealers. If unable to buy locally, write to us. Immediate shipment. Prices F. O. B. Algonquin.

Peter Brothers' Mfg. Co.

100 Railroad Street

Algonquin, Ill.

Have You Studied Metal Cutting Costs?



Do you realize the waste of time, waste of material, waste of labor and the general unsatisfactory results caused by using old style "See Saw" Hack Saws? Let the **Racine High Speed Metal Cutting Machine** solve the problem for you. **You** simply send us a **trial order**. Use the Racine 30 days under your own conditions and then advise us of the results. If time, labor, material and blades are not saved, then return the machine at our expense.

A 6x6, 8x8, 12x12 or 12x15"

Write to

Racine Tool & Machine Company
The Junction, Racine, Wis., U. S. A.

AUTOMATIC HIGH SPEED SAW

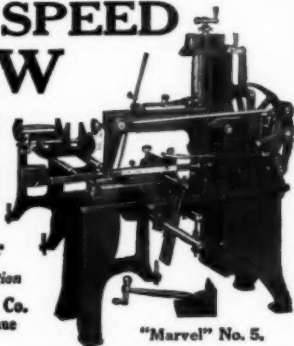
Attention is invited to the "**Marvel**" No. 5

Cuts duplicate pieces faster and at less cost than any other method.

Feeds the Bar

Write for full information

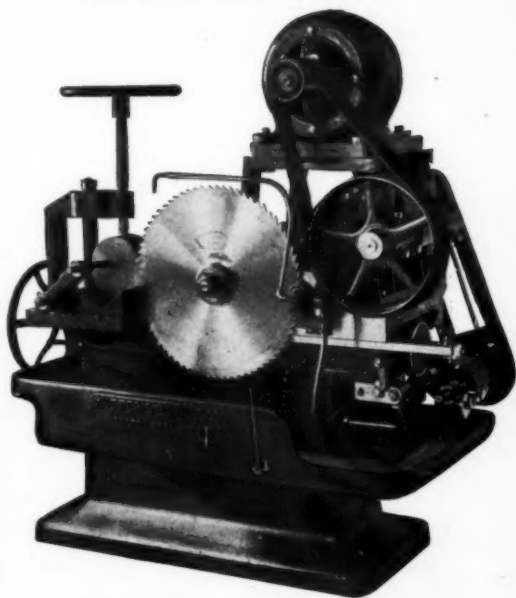
Armstrong-Blum Mfg. Co.
341 N. Francisco Avenue
Chicago, Ill.



"Marvel" No. 5.

Motor Driven Metal Sawing Machines

Made in Sizes 4, 6, 7, and 8-in.



8-in. Machine, Capacity 8½-in. Rounds, 8-in. Squares

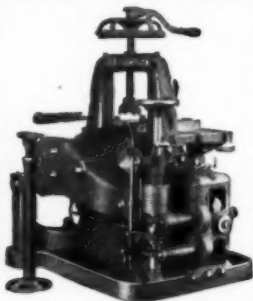
A solidly built modern tool of especially effective design, with powerful 43-to-1 gear drive and quick change gear feeds from $\frac{1}{8}$ -in. to $1\frac{1}{4}$ -in. a minute. The saw is 22-in. diam. by $\frac{3}{16}$ -in. thick, with B. & S. patent relieved teeth. For all kinds of steel cutting they are the largest producers of the solid blade milling saw type, and are not saw breakers.

Write for description of Sawing Machines and Automatic Saw Sharpeners

Nutter & Barnes Co.

326 A. Street. :- :- :- :- Boston, Mass.

The Lea-Simplex



succeeds where other Cutting-Off Tools have failed, because it is the best Cold Saw on the market. Let us tell you what a long list of satisfied users have to say about the many advantages of the Lea-Simplex, which they have found in this tool.

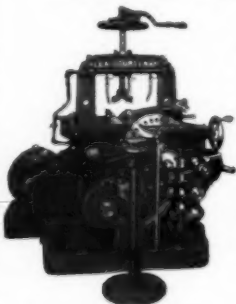
*Ask us for our literature;
a postal will bring it.*

Lea Equipment Company

Stenton and Wyoming Aves.,

Philadelphia, Pa.

Lea-Courtenay



This line of Cold Metal Sawing Machinery represents the last word in cold metal saw design. It has an increase in effective cutting range of 55% over other sprocket-driven metal saws of equal size, quick change gear feed, automatic stop, and power return to saw blade.

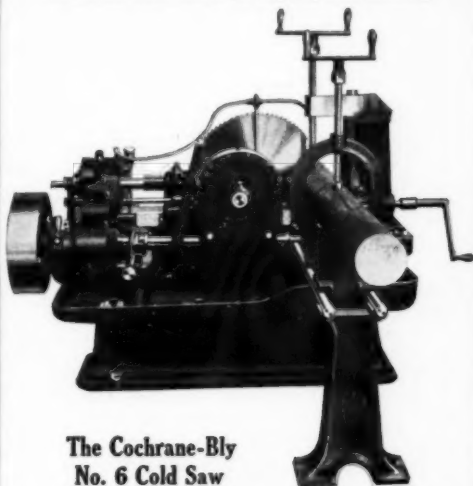
Bulletin "K" tells the story.

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90 West Street, New York

Sawing 8 $\frac{1}{2}$ -Inch Steel

A Notable Combination of Capacity and Economy



The Cochrane-Bly No. 6 Cold Saw

Superior driving mechanism, with favorable cutting conditions for the saw, which insure straight, smooth cutting, enables the machine to do easily what ordinary saws cannot do at all; and the machine that works easily is the one that earns and saves money. The carriage travel is automatically controlled, and the constant speed drive and positive gear feed give 10 cutting speeds, while the rack and pinion stock feed enables one man to reset heavy bars for duplicate cuts in 10 seconds. It is a big capacity, high economy saw in every detail.

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Five Sizes of Metal Sawing Machines
Two Sizes of Automatic Saw Sharpeners
Two Sizes of Die Filing Machines
Universal Shaper for Die and Tool Work.

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Cochrane-Bly Company
Rochester, N. Y.



DON'T RUN AWAY from your set screw troubles. Stay, and rectify them with the

Allen Safety Set Screw

It is a **new** screw—a **safe** screw—and a **guaranteed** one. Insist that your dealer gives you the ALLEN.

We Make a Large Line of Safety Lathe Dog Screws

Ask for booklet No. 13

The Allen Mfg. Co., Inc., Hartford, Conn.

Canadian factory, 29 St. Davids Lane Montreal, Canada.

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Some **KELLY** "Points"

They last a lifetime, "Save" first piece reamed
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The "big fellows" are doing so now

Our 48-Page Catalog may start you into *Modern Methods*. Ask for it!

THE KELLY REAMER CO., - Cleveland, Ohio

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The Horton Line

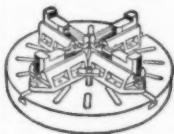
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Selected for Effectiveness

This hand operated, ball bearing chuck was added to our line because we recognized it as the most reliable drill chuck in market. It has been tested all over the world, and the unanimous approval of thousands of users establishes its superiority beyond question. Requires no wrench or spanner, but tightens and releases instantly by hand. Holds straight shank drills without clipping, and any drill true from shank to point. It is a time and trouble saver. Order one for trial; you'll be glad we suggested it.



Face Plate Chucks and Jaws For Lathes, Planers and Drills



Close fitting in the center, they will hold as small work as a chuck; easily fastened in any position; strong, light, with broad bearing surface; large operating screws, with double thrust bearings. The operating range and exceptional convenience of these jaws commend them to experienced mechanics. The sliding jaw is reversible in 4 to 6-inch sizes; in other sizes, whole jaw reverses.



4 and 6-in. Size.

Our Full Line is worth Knowing

Write For Complete Catalogue

E. Horton & Son Company

Windsor Locks, Conn.

The New Britain Drill Chuck

Hand Operated

Ball Bearing

Wrenchless



The chuck that grips the drill with a sure grip—is self tightening—the harder the pressure on the drill, the tighter the grip of the jaws. It is hand operated—no wrenches to be mislaid, no gears to break. And it is as easily released by hand, and *will not lock*. Made in two styles—one with No. 2 Morse taper arbor as part of the chuck, as shown in cut, and one with taper hole for separate arbor.

Prices on application

Union Manufacturing Co.

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New York

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Makers of a Complete Line of Chucks

140,000

Jacobs Improved Drill Chucks



One hundred forty thousand Jacobs Improved Drill Chucks purchased in ten years—there's a reason for this demand.

More Jacobs Improved Drill Chucks purchased during January 1913 than any previous month—there's a reason for this *increasing* demand.

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The Jacobs Manufacturing Co.
32 Union Place, Hartford, Conn.



Saved One Third the Cost of Machine in Two Weeks' Use.

So Says One of Our Customers

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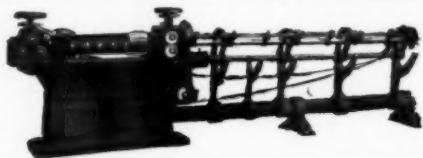
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C. E. Station, Bridgeport, Conn.



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Takes Wire from the Coil

straightens out all the kinks, making it **absolutely** straight, and cutting accurate lengths.

Costs very little to operate because it requires little attention from the operator beyond placing the coils of wire.

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Let us tell you more about it.

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Case Hardening, Annealing and Tool Hardening necessitate the use of an accurate and practical temperature gauge.

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Special Prices if you refer to this ad.



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 " No. 1 36 " "



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8 in., 5 and 6 ft. tables and guard.
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Trimmers, Lathes, Core Box Tools, etc.

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In Every Shop Where Small Pieces Are
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Centrifugal Dryer
with Removable Wire Basket

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In Shop Practice Means

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The American Tool & Machine Co.
Incorporated 1864 Boston

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Ball Crank, Compound Rest, Two-Ball Lever and Machine Handles

The Price, on account of quantity production, is below the manufacturing cost of cast iron or forged handles.

In Quality there is no comparison. They are accurate, highly finished, and ready to attach.

Write for Catalog of Standard Handles, prices and discount

The Cincinnati Ball Crank Co.
Oakley, Cincinnati, Ohio



**Durant
Counters
Stamping
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are **INSEPARABLE** in *up-to-date Shops*. Eliminate costly hand-counting, annoying under-runs and wasteful over-runs by using counters which are designed, built and sold **right**. Their count is absolutely accurate.

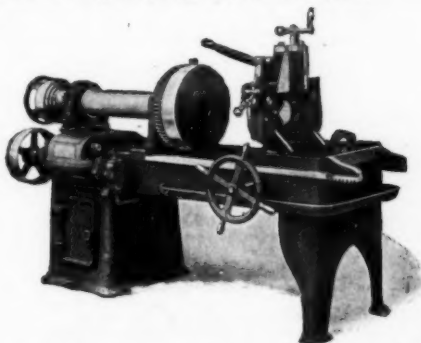
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Those who need Power Pipe Machinery, and those who make the machines to supply that need, must depend upon each other. So why not get together, for mutual profit?



Modern Power Pipe Machinery For 1/4-in. to 18-in. Pipe

That's our line, made in numerous regular and special types and sizes to meet all requirements. If you will let us know what *your* requirements are, we will try to make you a profit-earning proposition. If we can't, we don't want your order, for a satisfied customer is an asset—the other kind is a liability.

*A frank discussion may be good for both of us
Won't you write the first letter?*

Bignall & Keeler Mfg. Co.
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Combination Moulds and Ladles for Making Soft Metal Vise Jaws and Hammers



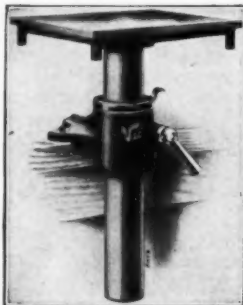
Equipment for Moulding Jaws for Bench Vises

A BOY, with little effort and expense, can mould the kind of Soft Metal Vise Jaws that you need for holding fine and finished work. Just melt the metal in the ladle and, with a slight depression of the handle, it flows into the mould. We make similar devices, in different sizes, for moulding Hammers.

A mighty good thing at a low price. Write for particulars.

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The Victor Surface Table And Victor Swivelling Vise Make a Mighty Handy Combination



The Victor Surface Table can be used in the base of the Victor Swivelling Vise, as shown in cut, or on bench detached from stem. A general purpose table, especially appreciated by die and patternmakers, etc.

Write for description and special approval offer on the Victor Swivelling Vise, the vise hand's friend, with or without Surface Table.

Victor Vise Co.

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Springfield, Ohio



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Of Tucker's Positive Lock
Compression Grease Cups
They Won't Jar Off**

For Automobiles and all kinds of machinery having excessive vibration. Cup member has internally milled threads to gauge limits, ensuring interchangeability. We are prepared to furnish the cup part in pressed sheet brass in the following sizes:

$\frac{3}{4}$ in., 1 in., and $1\frac{1}{2}$ in., all 24 pitch thread.

Complete	{	No. 000	$\frac{3}{4}$ in. pipe shank
Cups		No. 00	1 in. pipe shank
		No. 0	$1\frac{1}{2}$ in. pipe shank

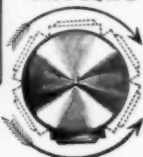
PATENTED JANUARY 11, 1910

Tucker's Oil Hole Covers

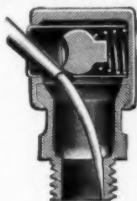


Style C, Self Closing

No. 5 Style B



Self Closing



Style A

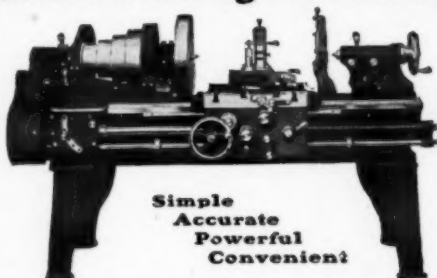
Note the indent of ball valve on styles B & C



Send for Catalogue of full line of Covers
for all kinds of machinery having oil holes

W. C. & F. C. Tucker, Hartford, Conn.

Standard Engine Lathes



**Simple
Accurate
Powerful
Convenient**

Furnished with either standard cone or with 3-step cone double-back-geared, carrying a wide belt, with 18 spindle speeds and wide feed range.

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Planer Type Milling Machine
Condition First Class



Four spindles.

Each spindle independently adjustable.

Maximum width between cutters 60 inches.

Maximum distance vertical spindles to top of table 36 inches.

Table 54 in. wide, 125 in. between pockets.

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What they can do for you.

They are equipped to make it interesting.

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Drills.

4 spindle Dwight-S sensitive drill.
4 spindle Quint turret drill.
6 spdl. No. 3 Garvin, mult., table fd.
20 in. S. & W., sq. base.
18 in. Baker Bros. high speed.
23 in. Barnes Sr., st. hd., b. g., p. f. (3).
24 in. Hamilton, sl. hd., b. g., p. f.
26 in. Bickford, st. hd., b. g.
21 in. Hamilton, b. g., p. f.

23 in. Bickford, b. g., w. & J. feed.
26 in. Blaisdell, sl. hd., w. f.
26 in. Bickford, heavy type, b. g., w. f.
24 in. Aurora, sta. head, b. g., p. f.
25 in. Barnes sta'y hd., b. g. and p. f.
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34 in. Barnes sl. hd., b. g., p. f.
2 ft. American, sensitive radial.

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15x6 Walcott, back geared, rebuilt.
16x6 Muller, b. g., p. c. f.
16x6 Springfield, c. r., p. c. f.
16x7 Springfield, c. r., p. c. f.
18x8 Blaisdell, c. r., h. s.
18x10 Blaisdell, plain rest.

18x10 Putnam.
20x12 Le Blond, p. r., h. s.
22x11½ New Haven, c. r.
24x12 Schumacher & B., c. r., p. c. f.
30x16 Schumacher & B., comp. rest.
30x17 Gleason, pl. r., p. c. f.

Miscellaneous Lathes.

30 in. x 8 ft. P. & W. p. hd. chucking
lathe, 24 in. 4-j. chk., p. f. to t. s.
13 in. Gisholt, standard turret, comp.

Pearson b. g. hub machine, like
turret lathe, 2½ in. h. s.
22x7 Lodge & D., turret, bk. gd.

Planers.

24x24x 6 L. W. Pond, 1 head.
30x30x16 Hamilton, 2 heads.

20x50 Pedrick & Ayer, travel. head,
open side.

Screw Machines—Turret Lathes.

2 in. Cleveland automatic.
No. 3 Foster-K. pl. hd., 1½ in. cap.
No. 2 Warner & S., pl. hd., w. f., ½".
No. 1 Pratt & W. screw machine.

18 in. Lodge & D., b. g., p. f. to tur-
ret slide, 2 in. w. f. cap.
2 in. x 24 in. Jones & L. flat turret,
cone head, fine order.

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Blower, No. 4 Sturtevant, 7 in. out.
Blower, 30 in. Buffalo, 5½ in. outlet.
Blower, No. 6 Boston & Co., S.
Bolt cutter, 1 in. National. dbl. hd.
Bolt cutter, 1½ in. Nat'l. sgl. hd.
Bolt cutter, 1½ in. Adams, single.
Boring mill, 37 in. Bridgep't, 2 hds.
Boring mill, 52 in. Rogers & Hemp-
hill, 2 heads.
Boring mill, 30 in. Colburn, 3j. ck.
Boring mill, 51 in. Niles, 2 hds.
Boring mill, 60 in. Niles, 2 hds.
Cold saw, No. 4 Keystone, 4½ in.
Cutting-off mach., 2 in. Hurlbut & R.
Gas furnace, No. 1 Westmacott.
Gear hobber, No. 1 Adams-Farwell
Gear hobbors, Reynolds (2).
Grinder, Gisholt universal tool.
Grinder, disc, No. 4 Besly, 18 in.
Grinder, plain, Brown & S., 12x18 in.
Grinder, No. 3 Brown & S.
Grinder, 20x3 Diamond, single wet.
Grinder, Greenfield, tap and die.
Grinders, No. 1 Bath univ., (2).
Hammer, 100 lb. No. 4 Beaudry, belt.

Keyseaters, No. 1 Morton, 18 in.
stroke, (2).
Keyseat miller, J. T. Burr.
Miller, American hand.
Miller, No. 5-B Becker-B, plain.
Miller, No. 3 Garvin, plain.
Miller, No. 2½ Garvin, plain, b. g.
Miller, No. 2 Kearney & Trecker,
back geared, plain.
Pipe mche., 4 in. Borden, complete.
Punch and shear, No. 2 Colton,
double end, 20 & 8 in. throats,
capacity 4x½ 1½ in. rounds.
Punch press, No. 6 Consolidated, o
b. l., 3 in. stroke, not geared, new.
Punch press, No. 4 V. & O., straight-
sided, 2 in. stroke, 31" bet. uprights.
Punch press, No. 6 R. & K., geared,
o. b. l., roll feed.
Riveter, ½ in. Shuster.
Roll threading mche., Rudolphi & K.
Squaring shear, 50 in. power.
Tapper, No. 1 Garvin, vertical.
Toggle press, 10 ft. Robinson.

In replacing our manufacturing equipment, we find the following first class Used Machine Tools which we offer at attractive prices:

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14"x 6' Lodge & Shipley, q. c. g.
 16"x 6' Hendey, q. c. g.
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 17"x 6' Gray.
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 20"x12' Lodge & Shipley, q. c. g.
 24"x 8' Lodge & Shipley, q. c. g.
 24"x13' Sellers.
 36"x12' Lodge & Shipley, q. c. g.

SPECIAL LATHES

No. 3 Lodge & Shipley Rapid Reduction Lathe.
 24"x 7' Lodge & Shipley Chucking Lathe.
 12"x 4' Lodge & S. Speed Lathe.
 14"x 6' Towsley Speed Lathe.

METAL SAWS

No. 3 Nutter-Barnes Cold Saw.
 Franklin Cold Saw, 3½ in. cap.
 Globe Power Hack Saw, 8" cap.

MISCELLANEOUS MACHINES

One Marion Double Grinder.
 One Marion Double Grinder on stand.
 One Diamond Disc Grinder on column.
 One Sturtevant Blower, Diameter of outlet 2½".
 No. 3 Greenard Arbor Presses.
 Universal Swivel Table for Radial Drill.
 Fay & Egan Single Spindle and Disc Sander.
 Brown & Sharpe Grindstone Frame for 5"x36" Stone.
 One Mueller Grindstone Frame for 4"x27" Stone.
 One 12"x40" Mumford Molding Machine.

The Lodge & Shipley Machine Tool Co.
CINCINNATI, OHIO, U. S. A.

Machine Tool Makers

should investigate carefully the facilities offered by **Hitchcock's Machine Tool List** for reaching this trade in all parts of the country. Its circulation is specialized to completely cover *every line of manufacture* in which machine tools are used—as well as all railroad and other tool-using shops—with a thoroughness and effectiveness not equalled by any other advertising medium.

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cap.
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New
AND
Slightly Used Machinery
AT
Attractive Prices

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- 15 in.x 6 ft. Rockford Lathe.
- 18 in.x 8 ft. Rahn Larmon Lathe.
- No. 2 Owen Plain Milling Machine.
- No. 3 Owen Plain Milling Machine.
- No. 3 Owen Universal Milling Machine.
- 2½ in. Dreses Screw Machine.

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- 5 ft. Western Plain Radial Drill.
- 6 ft. Bickford Plain Radial Drill.
- 6 ft. American Full Universal Radial Drill.
- American Hand Milling Machine.
- No. 3 Cincinnati Universal Milling Machine.
- No. 7 American Screw Machine.
- Brown & Sharpe Plain Grinding Machine, capa-
city 12 in. Diameter.
- Wais & Roos 100 lb. Hammer.

The American Tool Works Co.
Cincinnati, U. S. A.

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At Bargain Prices

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- No. 1 Cleveland horizontal.
- Style "B" Binsse horizontal.
- 37" Niles vertical, two swivel heads.
- 76" Bullard, two swivel heads.
- 84" Betts, two swivel heads.

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- 26" Barnes, 26" Mechanics.
- 21" Sibley & Ware.
- 21" Cincinnati.
- 24" Aurora, sliding head.
- 26" Barnes, 26" Lodge & Davis, sliding head.
- 28" Rockford, 28" Snyder, sliding head, complete.
- 32" Hamilton, sliding head.
- 42" Barnes, sliding head.

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- 36" Dreses, plain, with swinging table, tapping.
- 42" Cincinnati Bickford, plain, gear box drive.
- 54" Dreses plain, gear box drive, swinging table.
- 5 ft. Davis & Egan full universal, cone drive.
- 5 ft. Western full universal, gear box drive.

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- No. 1 Adams (Farwell) gear hobber.
- 18"x4" Becker-Brainerd, spur and bevel.
- 34" Superior gear milling machine.
- 72" Cincinnati spur gear cutter, arranged for motor.
- Norris & Bickford) four spindle multiple.

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- 10"x34" Thompson universal.
- 24" Springfield double emery.
- Bestly duplex disc grinder, 15" discs.
- Heald ring grinder.
- Springfield-Brandes vertical grinding planer.
- No. 3 B. & S. cutter and tool grinder.

Engine Lathes.

- 14"x 6' Whitcomb-Blaisdell, 3 step cone, compound rest.
- 14"x 8' American, compound rest.
- 17"x 6' Bradford, compound rest, raised to 20".
- 18"x 8' Lodge & Shipley, 5 step cone, compound rest.
- 18-20"x8' American gap, compound rest.
- 18"x15' Whitcomb-Blaisdell, 3-step cone.
- 20"x 8' Lodge & Shipley, patent head.
- 20"x10' Flathers, compound rest.
- 20"x12' Gray, compound rest.
- 22"x16' Pond, compound rest.
- 26"x20' Sellers, compound rest.
- 30"x15' New Haven, compound rest.
- 48-64"x16' Putnam, triple geared face plate.

Also Turret Lathes, Screw Machines, Milling Machines, Planers, Pipe Machines, Shapers.

*Send for our May List Used Machinery,
giving full list and complete descriptions.*

Marshall & Huschart Machinery Company
17 S. Jefferson St., Chicago. 334 N. Capitol Ave., Indianapolis.
915 Chemical Bldg., St. Louis.

"Better than usual second-hand—at less than usual prices"

A remarkably opportune time to purchase good used Tools, for

We "went in big"—and purchased every Tool in the shop

To close them out—our prices will tell how we do it

Planers A fine assortment—17 to 132 in. in width—
all lengths—best Standard makes.

Lathes Many as good as new—14 to 96 in. swing, vari-
ous lengths—some with quick-change gear box.

Upright Boring Mills 2½, 3, 3½, 6, 7, 14 and 20 ft. Swing, Double-
head—Bullard and Niles Co.'s.

Hor. Boring Machines Several—ranging in sizes—2 to 3½ in. bars,
Niles-Bement-Pond.

Milling Machines Plain, Universal, Vertical—and Lincoln type
—Brown & Sharpe—and other makes.

Radial Drills A great many Bickford—Prentice Bros. and
Pond—2½ to 6 ft. Arms—Plain and Univer-
sal—some with Speed-box.

Multiple Drills 8 and 14 spindles—Baush.

Upright Drills 20 to 50 in. Swing—Barnes, Pond, etc.

Turret Lathes A number of Jones & Lamson 2x24 in., with
equipments—Potter & J. and Bullard—all sizes.

Shapers Smith & Mills Co.'s and Cincinnati, 12 to
26 in. strokes.

Slotters 12, 13 and 16 in. strokes, Niles-Bement-Pond.

Gear Cutters 22, 26 and 30 in. Brown & S. and Gould & E.

Bolt Cutters 1¼ to 1½ in. Acme.

Pipe Machines 2, 4 and 10 in. Jarecki.

Steam Hammers 400 and 700 lbs.—Bell.

**Grinders, Cutting-off Machines, Boiler-shop Tools, Punches, Shears,
Bending Rolls, etc.**

All the Tools of the highest grade—built by the best Machine Tool
Manufacturers in the country.

Write promptly—and get "the first choice"

J. J. McCABE, - 30 Church St., New York

Portable Tools

CYLINDER BORING BARS, CRANK PIN TURNING MACHINES, ETC.

Write for Catalog

H. B. UNDERWOOD & CO. 1027 HAMILTON ST.
PHILADELPHIA, PA.

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Second-Hand Machinery.

Lists of second-hand machinery, either for sale or wanted, will be published under this heading at the rate of **40 cents a line**, across the page, each issue, with a minimum charge of **\$4.00**. Sub-headings are counted as one line, but the name and address of advertiser are not included in the space charged for. Prices and full descriptions of the machines listed will be furnished by the parties offering them for sale. If you do not find what you require, use the slip inclosed with each book to make known your wants to the publisher.

FOR SALE BY

Buffalo Laundry Supply Co., - 150 N. Division St., Buffalo, N. Y.

LATHE.

One lathe, 18' centers, 36" swing,.....\$ 150.

PIPE MACHINE.

One pipe machine, for 1" to 2" pipe,.....\$ 40.

Or will trade for lathe 10'x16'.

WOOD-WORKING MACHINES.

One moulder, 4 side, 6 in.,.....\$ 90.

One jig saw, large,.....20.

FOR SALE BY

Wm. C. Johnson & Sons Machinery Co.,

210-212 Washington Ave.,

St. Louis, Mo.

Here are three exceptional bargains:

CYLINDER BORING MACHINE.

6' Niles horiz. Corliss engine cylinder boring machine for boring cylinder, two ports and facing both ends of cylinders at one setting and operation.

BORING AND TURNING LATHE.

30' Pit lathe for boring and turning fly-wheels, band wheels and rope wheels.

ELECTRIC CRANE.

40' span 25-ton electric traveling crane three motors, 220 volts, d. c.

FOR SALE BY

The Oosterlein Machine Co.

Cincinnati, Ohio

Centering machine, Whiton, two spindle, 1/2 to 4", 3 jaw chuck.....\$ 60.

Drill press, upright, 28"x4' 8" back geared.....100.

Gear cutter, Gould & Eberhardt automatic, 22"x5", with oil pump.....325.

Grinder, Brown & Sharpe No. 14, takes 10"x48".....650.

Lathe, 14"x6' screw cutting, with 8" universal chuck.....100.

Lathe, 18"x7' screw cutting, takes 48" between centers.....85.

Lathe, 30"x12' engine lathe.....225.

Milling machine, Oosterlein No. 24, plain.....490.

Planer, Lodge & Davis, 30"x30"x8'.....500.

Screw machine, 2" Cleveland Automatic, 5-hole turret.....400.

FOR SALE BY

S. W., Care Hitchcock's Mch. Tool List, - Caxton Bldg., Chicago

AIR PUMP.

14"x38"x21" Blake vertical twin air pump and jet condenser; pistons metallic packed; brass fittings.

GENERATORS.

200 k. w. 250 volts, d. c., G. E. type m. p. belted generator, 200 r. p. m.

Two 175 k. w. 125 volts, d. c., Westinghouse belted generators, 600 r. p. m.

MOTORS

Two 40 h. p., 250 volts, d. c. G. E. motors, 900 r. p. m.

30 h. p. 220 volts, d. c. Westinghouse motor, 975 r. p. m.

30 h. p., 245 volts, d. c. Westinghouse motor, 1700 r. p. m.

SECOND-HAND MACHINERY

FOR SALE BY

**The H. A. Stocker Machinery Co., 566-72 W. Randolph St., Chicago
610 Merrill Building, Milwaukee, Wis.**

LATHES.

- | | |
|--------------------------------------|--------------------------------------|
| 14x6 Flather and Draper, comp. rest. | 26"x10' American, q. c. g. |
| 16x6 Prentice Bros., compound rest. | 26x26 Bridgeford, compound rest. |
| 16x7 Pratt & Whitney, c. r. & taper. | 30x1" Bradford, c. r. and chuck. |
| 16x7 Blaisdel, comp. rest and taper. | 30x12 Flather, compound rest. |
| 18x10 Economic, compound rest. | 32x14 Putnam, compound rest. |
| 19x10 Cincinnati, compound rest. | 32x18 Pittsburg, d. b. g. |
| 20x8 Hamilton, q. c. g., comp. rest. | 32x18 American, comp. t., q. c. g. |
| 20x12 Draper, compound rest. | 42x18 Bridgeford, gd. hd., motor dr. |
| 22"x 8' American, q. c. g. | 50x20 New Haven, compound rest. |

SHAPERS.

- | | |
|--------------------------------------|--------------------------------------|
| 14 in. Flather, crank. | 17 in. Economic, single grd. crank. |
| 16" American, b. g. crank. | 18 in. Flather, single geared crank. |
| 16 in. Steptoe, single geared crank. | 22 Lodge & Davis. |
| 16 in. Walcott, single geared crank. | 28 Putnam. |

PLANERS.

- | | |
|---|-------------------------------------|
| 22x22x5 Whitcomb, good order. | 36x36x10 Niles, 2 heads. |
| 26x26x8 Whitcomb, (new, reduced price.) | 36x36x12 Gray, 2 heads. |
| 26"x26"x8' New Haven. | 40x38x14 Putnam, old style, low pr. |
| 30x30x10 Flather, 3 heads. | 42x42x14 Detrick & H., open side. |
| 36x30x12 Sellers, old style, low price. | 44x44x12 Pond, 2 heads. |
| | 48x48x20 Belmer, 4 heads, rebuilt. |

GRINDERS.

- | | |
|--|----------------------------------|
| No. 14 Landis, plain. | No. 2 Brown & Sharpe, surface. |
| No. 1 Cincinnati, universal cutter and tool. | No. 2 Brown & Sharpe, universal. |
| 14x72 in. Norton, plain. | No. 2 Walker, universal. |
| | No. 2 Bath, universal. |

MILLING MACHINES.

- | | |
|--|------------------------------------|
| No. 2 Henty, b. g., plain. | No. 3 1/2 Fox, plain. |
| No. 2 Kearney & Trecker, back gear, plain, with vertical attachment. | No. 13 Garvin, plain. |
| No. 4 Garvin profiler. | No. 3 Cincinnati, pl., nearly new. |
| No. 3 1/2 Waltham, bench. | No. 2 Brown & Sharpe, universal. |
| No. 3 Fox, plain. | No. 2 LeBlond, universal. |
| | No. 5B Becker, vertical. |

UPRIGHT AND RADIAL DRILLS.

- | | |
|--|--|
| 2 1/2 ft. Fosdick National radial. | 42 in. Barnes, geared feed. |
| 5 ft. arm Western universal radial. | 38 in. New H., sl. hd., bk. gr., p. fd. |
| 4 ft. Bickford plain, cone radial. | 35 in. Blaisdel, sl. hd., b. g. & p. f. |
| Sellers double column drill, 72" between uprights, head travels full width of machine. | 25 in. Prentice Bros., sl. hd., b. g., p. f. |
| | 23 in. Barnes, b. g., fr. co. shaft. |

POWER PRESSES AND PUNCHES.

- | | |
|---------------------------------------|---|
| No. 36 Niagara, geared. | No. 4 A Rudolphi & Krummel deep throat press. |
| Wold horn press. | No. 31 Toledo solid back press. |
| No. 30 Perkins, open back inc. press. | No. 1 Syversen solid back press. |
| No. 2 Rudolphi & K., o. b. i. press. | No. 3 Bliss "Stiles" geared punch. |
| No. 50 Crosby, open back press. | Humphrey single end punch, 36 in. throat, cap. 1 1/2 in 1 in. |
| No. 4 E. Rudolphi & K. arch press. | |
| No. 3A Bliss, toggle. 20 in. stroke. | |

SCREW MACHINES AND TURRET MACHINES.

- | | |
|---------------------------------|--------------------------------|
| 1 1/2" Warner & Swasey. | 1 1/2 in. Cleveland automatic. |
| No. 2 Pratt & Whitney. | 1 1/2 in. Cleveland automatic. |
| No. 2 1/2 Pratt & Whitney. | 2 1/2x24 Jones & Lamson. |
| No. 51 National-Acme automatic. | 3x36 Jones & Lamson. |
| 64 in. Cleveland automatic. | 14 Turret Lathes, small sizes. |

BORING MILLS—VERTICAL AND HORIZONTAL.

- | | |
|--|---------------------------------|
| 37 in. Niles, 2 heads. | 10 ft. Betts, 2 heads. |
| 42 in. Bullard, 1 swivel hd., 1 tur. hd. | 80 in. Pond, 2 heads. |
| Fitchburg horizontal, 36 in. swing. | No. 2 Fosdick hor., good order. |
| 34 in. Colburn, swivel turret. | |

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26"x 8
21"x 8
22"x10

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26" Da

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SECOND-HAND MACHINERY

The H. A. Stocker Machinery Co.,—Continued.

GEAR CUTTING MACHINES.

No. 3 Farwell hobbing machine.	72 in. Cincinnati, spur only.
No. 0 S. & S. hobbing machine, spiral attachment.	42 in. Gould & E., spur only.
Reynolds hobbing machine.	30 in. Flather, spur only.
	28 in. Brown & Sharpe, spur only.
MISCELLANEOUS.	
Bolt cutter, 1½ in. Schlenker.	Hammer, helve, 40 lb. Bradley.
Bolt header, ¾ in.	Hammer, drop, 500 lb. Standard.
Bulldozer, No. 5 Ajax.	Hydraulic press, 40 ton.
Centering machine, 4 in. Whiton.	Hydraulic press, 100 ton, with pump.
Cold saw, No. 4 Birdsboro, with six extra saws.	Pipe machine, 4 in. Saunders.
Cutting-off mche., 5" Hurlbut & R.	Punch and shear, No. 5 L. & A.
	Riveter, 3-16 in. Adt.

FOR SALE BY

The H. A. Smith Machinery Co., 384 W. Fayette St., Syracuse, N. Y.

No. 157-S	Air compressor, 10x10x12 Chicago Pneumatic, single stage.
No. 226-A	Bending rolls, one set 8', self contained.
No. 63-S	Drill, 4 spindle sensitive, ¼" capacity, Prentice.
No. 188-S	Lathe, 21" Gisholt, almost new.
No. 186-S	Lathe, 24"x10' LeBlond.
No. 215-S	Lathe, 24"x14' Gleason, double back gears.
No. 185-A	Lathe, 42"x16' Fifield, triple geared.
No. 183-S	Planer, 42"x42"x14' New Haven, 1 head.
No. 225-A	Plate planer, 19'.
No. 227-A	Punch and shear, 42" Perkins, new, low price.
No. 230-A	Wall radial drill, 6" Baush.

FOR SALE BY

F.P. Schlelein Mchy. Co., 114-116 W. ParkWay, N. S., Pittsburgh, Pa.

Belting, 10" double leather, 35 ft.	Engine lathe, 14"x6" Monarch.
Belting, 10" dbl. leather, 47½ ft.	Grindstone frame, iron, stone 28x3".
Blower, pressure, No. 4 Buffalo, ½" outlet.	Hammer, steam, 600 lb. Pittsburg, double frame.
Blower, pressure, No. 1 Champion, with attached countershaft.	Motor, 2 h. p. Lundell, 500 v., d. c.
Buffing stand, double end, column type	Planer, pony, 24"x6" Fay & Egan.
Clutch pulley, 30"x8", 2" bore.	Radial drill, plain, 4½" Baush.
Drill, portable, No. 4 Dallett.	Screw press, No. 3 Young & Wheeler, open back, hand power.
Exhaust fan, No. 9 Champion, 16" inlet and outlet.	Turret lathe, 12" Lodge & Davis.
	Wire cutter, ¼" capacity Shuster, hand power.

FOR SALE BY

Western Machinery Co., 6th and Baymiller Sts., Cincinnati, Ohio.

LATHES.

26"x12" Niles, p. r.,	\$ 300.	20"x14" G. A. Gray, c. r.,	\$ 275.
26"x 8" Pratt & W., c. r.,	300.	18"x17" Lodge & Davis, c. r.,	325.
24"x 8" Steptoe, blks. to 30"	275.	About 15 Smaller Lathes.	
22"x10" Niles, p. r.,	250.		

DRILLS.

4' pl. U. R. D. radial,	\$ 275.	24" Bickford, slid. hd.,	\$ 70.
30" Bickford, slid. hd.,	35.	26" Fitchburg, b. g., p. f.,	125.
26" Davis b. g., p. f.,	75.		

MISCELLANEOUS.

Grinder, universal, No. 2,	\$ 300.	Screw machine, ¼" Cleveland,	\$ 150.
Hack saw, 12", motor driven, ..	75.	Variety woodworker No. 2,	135.
Reducing press, No. 70 Bliss, ..	250.		

SECOND-HAND MACHINERY

FOR SALE BY

Niles-Bement-Pond Company, 111 Broadway, New York.
Located at Chicago, Boston and New York.

Send for Catalogue No. 18.

LATHES.

12x5 Sebastain.
 13x6 P. & W., r. & f., taper.
 14x5 American, brass, Fox att.
 14x5 Bradford, taper.
 14x5 Prentice.
 14x8 Prentice.
 15x7 speed lathe.
 16x6 Pratt & Whitney geared head
 tool room lathe.
 16x8 LeBlond.
 16x8 Hendey.
 16x10 P. & W., r. & f. & t.
 18x6 Pond, turret tool post.
 18x7 Pond, turret tool post.

18x8 Flather, quick change.
 20x10 Flather, c. r.
 22x12 Niles, with taper.
 26x12 Pond, comp. rest.
 28x12 Pond, compound rest.
 30x14 Niles, c. r.
 32x12 Pond, compound rest.
 36x17 Pond, 220 v. motor drive, taper.
 36x18 Bement, comp. r., tri. grd.
 36x28 Bement, comp. r., tri. grd.
 40x16 Bement, b.g., not screw cutting.
 42x22 Niles, comp. r., tri. grd.
 42x30 Putnam, comp. r., tri. grd.
 44 in. P. & W. pulley lathe.

SCREW MACHINES, TURRET LATHES, ETC.

14x5 American, square arbor.
 1½ in. B. & O. hand screw mch.
 No. 3, 2 15-16 in. Niles screw mch.
 2x24 Jones & Lamson.
 3x36 New Model P. & W.
 21 in. Gisholt, turret.
 24-27 Contrason semi-automatic tur-
 ret, 2 3-16 in. hol. sp.
 29 in. Milwaukee turret, 4½ in. hol. sp.

½ in. Hartford automatic pin machine.
 ½ in. P. & W. automatic screw mach.
 ½ in. P. & W. 2 sp. automatic screw
 machine.
 ¾ in. Acme old style 4-sp. automatic.
 ¾ in. single turret Spender automatic.
 21-32 in. No. 2 Brown & Sharpe au-
 tomatic screw machine.

BORING MACHINES.

30 in. tur. hd. b. & t. mill, Colburn.
 50 in. Niles pulley borer.
 7 ft. Pond b. & t., 2 heads.
 8 ft. Pond b. & t., 2 heads.
 10-16 ft. Niles, like new.
 14'-20' Betts extension, b. & t., 2 hds.

2 in. sp. Kelly hor. bor. and drill.
 3½ in. sp. Bement hor. bor. & drill.
 4 in. sp. Betts, hor. bor. & drill.
 96 in. swing x 10 ft. centers bor. & fac-
 ing; weight: about 43,000 lbs.

UPRIGHT AND SENSITIVE DRILLS.

13 in. 1 sp. sensitive, motor d., 110 v.
 10 in. 2 sp. sensitive, Slate.
 10 in. 3 sp. sensitive, Slate.
 10 in. 3 sp. sensitive, Signourney.
 14 in. 4 spindle W. & R. sensitive.
 2 spindle dbl. column sen., Langelier.
 17 in. 4 sp. gang, Jones & L.
 20 in. No. 23 Foote Burt high duty.

30 in. sli. head, Gould & Eberhardt.
 36 in. sliding head, Gould & E.
 4 spindle Bement, multiple, 11 ft.
 between housings.
 No. 11 multiple drill, P. & W.
 10 sp. adjustable R. & W., capacity
 1½ in. holes in 37 in. circles, belt or
 motor; weight: 30,000 pounds.

RADIAL DRILLS.

2½ ft. semi-radial, Hiles & J.
 4½ ft. semi-radial, Barr.
 4 ft. Niles, plain.
 4 ft. Niles, univ.
 5 ft. Niles, plain.

5 ft. plain, motor, Pond.
 5 ft. 6 in. universal, Niles.
 6 ft. 10 in. semi-universal, Niles.
 7 ft. 6 in. full universal, Niles.
 Univ. portable radial, Prentice.

MILLERS AND GEAR CUTTERS.

No. 1 Duplex Van Norman.
 24x7 table, plain, Becker.
 43x9½ No. 3 Cincinnati plain, b. g.
 Single sp. profiler, 21x24 in. table,
 Garvin.
 P. & W. spline miller.
 6x14 thread miller, P. & W.

6x80 thread miller, P. & W.
 36" spur and bevel, Gould & E.
 36 in. spur gears, Pond.
 48 in. spur gears, Brown & Sharpe.
 72 in. spur gears, Niles.
 84 in. spur gears, Niles.

SHAPERS AND SLOTTERS.

10 in. crank shaper, P. & W.
 10 in. crank shaper, Miles.
 12 in. crank shaper, Bement.
 20" Bement, 220 v. motor, traveling
 head, like new.

18 in. double trav. head, Cincinnati.
 32 in. triple grd. rack, Cincinnati.
 12 in. crank slotter, Bement.
 14 in. crank slotter, Niles.
 18 in. crank slotter, Bement.

SECOND-HAND MACHINERY

Niles-Bement-Pond Company—Continued.

RAILROAD MACHINERY.

46 in. car wheel lathe, Bement.
Niles double axle lathe.
Bement double axle lathe.
Putnam double axle lathe, ex. heavy.

79" wheel lathe, single quartering attachment, Niles.

90" ex. heavy wheel lathe, Niles, motor, with or without quartering att.

PLANERS.

22x22x6 Harrington.
24x24x6 Powell
26x28x7 Niles, heavy type.
26x23x16 Miles, 2 hds.
30x30x6 Pond, 1 hd.
30x30x24 Sellers, 2 hds.
32x32x12 Pond, 2 hds.
32x32x14 Pond, 2 hds.
36x36x 8 Niles, 1 head.
36x36x12 Pond, 2 heads.

36x36x20 Pond, 3 hds.
42x42x12 Woodward & P., 4 hds.
42x42x20 Miles, 3 hds.
48x48x16 Pond, 4 hds., heavy, 220 v. motor.
48x48x20 Sellers, 3 hds.
50x50x18 Gleason, 2 hds.
72x60x20 Niles, 2 hds.
86x86x35 Pond, 4 hds.

MISCELLANEOUS.

Bar cut-off saw, 22" diam. blade.
Bending and straightening machine, horizontal, for 10 to 15 in. beams and channels.
Cut-off machine, 2½ in. P. & W.
Cut-off machine, 4½ in. Starr.
Engines, 28 to 90 h. p.
Grinder, drill, 3 in. Sellers.
Grinder, plain, 5x32 in. Landis.

Grinder, univ., 10x20 Landis.
Grinder, 12x96 in. Springfield.
Grinder, tool, Gisholt.
Pipe machine, 6 in. Oster.
Saw grinder, automatic.
Spring wind and cut-off machine, auto., for springs 7-32x½ in. long to 1 in. long, 1-16 in. between coils.

FOR SALE BY

W. L. Perkins Machinery Co.

30 Church St., New York

LATHES.

12"x 5" Starr, c. r., hollow spdl.
16"x 8" Standard, c. r., hollow spdl.
18"x 7" Pond, compound rest.
22"x16" Harrington, compound rest.
17"x17"x32" Miles.
20"x20"x34" New Haven.

2"x24" Jones & Lamson flat turret, set over head.
30"x18" Niles, compound rest.
42"x12" Harrington, triple geared.
42" Niles car wheel lathe.

PLANERS AND SHAPERS.

36" Fellows gear shaper.
28"x16" New Haven, c. r., hol. spdl.
32"x32"x8" Pond, double head.

24" Gould & Eberhardt, b. g.
12" Steptoe, crank.

FOR SALE BY

The Osborne & Sexton Machinery Co.,

Columbus, Ohio.

LATHES.

12x 5 South Bend, h. s., cp. rest.
14x 6 Blaisdell, hollow spindle.
16x 6 Reed, hollow spindle.
20x8 Bridgeport, h. s., cp. r., taper.

20x12 Fifield, comp. rest. (2).
20x12 Hamilton, h. s., c. r., taper.
22x16 Lodge & Davis, hol. spdl.
48x19 Gleason, 36 in. raised.

PLANERS AND SHAPERS.

14 in. Hendy.
14 in. Steptoe.
16 in. Gould & Eberhardt.

24x24x6 Gray.
48x48x20 Belmar, 4 heads.
72x72x19 Betts, 4 heads.

MISCELLANEOUS.

Boring mill, 50 in. Niles.
Boring mill, Niles, 14-20 ft. exten.
Drills, 22 and 24 in. Barnes, complete.
Gas engines, 10, 15, 25, 40 & 60 h. p.
Gas furnaces, Chicago, (2).
Hammers, drop, 300, 750 and 3,000 lbs.

Hammers, helve, Schatz & Dayton.
Miller, plain, Grand Rapids No. 1.
Punch press, No. 12 Etna, inc.
Radial drill, 5 ft. Niles, plain.
Rolls, Toledo shovel blanking.
Threading mches., Webster & P., (2).

SECOND-HAND MACHINERY

FOR SALE BY

The Lake Erie Machinery & Supply Co., (Machinery Dept.)
408-412 Frankfort Ave., N. W. Cleveland, Ohio.

Revised list of Second Hand Machinery at reduced prices. Write for prices.

LATHES.

- | | |
|---|--|
| 11"x 4' Star, milling att., 2 chucks. | 24"x16' Gleason, plain rest, chuck. |
| 14"x 6' Bradford, h. s., c. r., chuck. | 24"x26' New Haven. |
| 15"x 6' Blaisdell, hol. spdl., c. r. | 24"x28' Bradford shaft lathe, h. s., c. r. |
| 16"x 5' I. Johnson, taper att. | 32"x22' Enterprise, raised to 40". |
| 18"x 6' Blaisdell, tur. on carriage. | 34"x22' Enterprise. |
| 19"x 6' Blaisdell, b. g., p. r., taper. | 50"x15' bull lathe. |
| 20"x 8' W. & W., q. c. id., h. s., new. | 88"x20' Niles bull lathe. |
| 24"x 8' American, h. s., c. r., chuck. | |

TURRET LATHES & SCREW MACHINES.

- | | |
|--------------------------------------|---|
| 1' Cleveland automatic. | 15"x 6' American b. g. Fox lathe. |
| No. 2 Pratt & W. plain turret lathe. | 16"x 6' Lodge & B. b. g. Fox lathe. |
| 18" Warner & Swasey turret lathe. | No. 00 B. & S. automatic screw machines, (2). |
| 24" W. & S. Monitor turret lathe. | |

SHAPERS.

- | | |
|---|-----------------------------------|
| 16" Walcott & Wood, triple gd., new. | 24" Hendy, triple geared. |
| 16" Barker, back geared crank, new. | 26" Lodge & Davis, triple geared. |
| 20" Walcott & Wood, high speed back geared crank. | 28" Steptoe, triple geared. |

DRILLS.

- | | |
|---------------------------------------|-------------------------------------|
| No. 1 Prentice Bros. radial, 4' arm. | 21" Hoefler 6-spindle, complete. |
| 13" Dwight Slate 4-spdl. sensi., (2). | 22" Lodge & Davis, sliding head. |
| Prentice 4-spindle sensitive. | 36" Baker Bros., complete. |
| No. 2 Garvin, 3-spindle gang. | Gardam, multiple spindle. |
| No. 4 Garvin, 4-spindle gang. | Foot-Burt, multiple spindle. |
| 20" Canedy-Otto drill press. | No. 1 Burke, bench, with Jacobs ck. |

PLANERS.

- | | |
|------------------------------|--------------------------------|
| 16"x16"x24" Belden, 1 head. | 40"x40"x10' Steptoe-McFarland. |
| 17"x17"x18" Whitcomb, crank. | 48"x48"x20' Belmar, 4 heads. |
| 26"x24" 6' L. W. Pond. | 60"x60"x18' Pond, 3 heads. |

MILLING MACHINES.

- | | |
|-------------------------------|--------------------------------|
| No. 12 Garvin, plain, (3). | No. 3 Kempsmith, plain. |
| No. 13 Garvin, plain, (2). | No. 3 Becker, vertical. |
| No. 2 Pratt & Whitney, plain. | No. 2 Hendy Norton, universal. |

NUT TAPPERS AND BOLT CUTTERS.

- | | |
|-----------------------------------|--------------------------------|
| 1" Acme 6-spindle nut tapper. | 2" Acme 3-spindle bolt cutter. |
| 1 1/2" Acme 6-spindle nut tapper. | 3" Reliance bolt cutter. |
| No. 2 Garvin tapping machine. | |

PRESSES.

- | | |
|-------------------------------------|--|
| No. 1 Cady punch press. | G. A. Crosby punch press. |
| No. 19 Bliss punch press. | No. 3 G. A. Crosby punch press. |
| No. 52 Bliss, straight side, plain. | No. 1 Stiles & Parker punch press. |
| No. 71 Bliss, straight side, plain. | No. 3 Stiles b. g. punch press, with 3 extra bolster plates. |
| No. 41 Toledo plain power press. | No. 60 Waterbury back geared punch press. |
| No. 4 American Can, plain, o. b. i. | |
| No. 7 Niagara, plain, o. b. i. | |

GRINDERS.

- | | |
|------------------------------------|--|
| No. 1 Thompson univ., motor drive. | 24"x 7' Springfield auto. oscillating surface grinder. |
| 24" Leland, wet tool. | |

MISCELLANEOUS.

- | | |
|--|--|
| Blower, No. 8 Sturtevant Monogram. | Grinder, tool post, 110 v. Hisey, d.c. |
| Boring bars, (9). | Hack saw, 6" Challenge. |
| Boring machine, vertical, American. | Hammer, steam, 500 lb. Bell. |
| Broaching mach., Waterbury-F. | Keyseater, No. 6 Morton, 4 cutters. |
| Chuck, 24" Westcott combination, with 2 sets jaws, pract. new. | Keyseater, No. 24 Mitts & Merrill. |
| Exhauster, No. 3 Champion, new. | Keyseater, No. 2 Davis. |
| Exhausters, three 28"; one 50". | Magnet wind'g lathe, high-speed. |
| Floor crane, 1 1/2 ton Franklin. | Punch & shear comb., 4' Keene. |
| Gas engine, 3 h.p. Fairbanks-Morse. | Slotter, vertical, 12". |
| Grinders, lathe center, Gem, (6). | Tapping mchs., No. 2 Garvin auto. |
| | Welder, port. acetylene, Economy. |

SECOND-HAND MACHINERY

FOR SALE BY

Joseph T. Ryerson & Son, - 16th and Rockwell Sts., Chicago

PLANERS.

Item.			
H 1032	American 24x24x6, motor.	H 169	Sellers, 42x42x8½, 2 heads.
H 927	Gray 24x24x6, 1 head.	H 946	Lodge & D. 36x36x8, 1 head.
H 167	Sellers, 42x42x6½, 2 heads.	H 1004	Hamilton 36x36x10.

LATHES.

H 793	Prentice 9x4 hollow spindle, compound rest, chuck.
H 767	11x3½ speed lathe, turret slide, cut-off slide.
H 1025	Hendey 14x5, q. c. g., compound rest, chuck.
H 902	Bradford 14x6 hollow spindle, compound rest, chuck.
H 804	LeBlond 14x8 hollow spindle, compound rest.
H 1024	Flather 16x8, plain rest, hollow spindle, chuck.
H 997	American 16x10 gd. head, q. c. g., taper attachment.
H 1027	Flather 17x8, q. c. g., compound rest, 1½ in. hole in spindle.
H 1029	Whitcomb-Blaisdell 18x8, geared head, q. c. g.
H 1028	Hamilton 19x8, q. c. g., compound rest, taper attachment.
H 945	New Haven 26x24, swings 28½.
H 921	Lodge & Davis 22x16 hollow spindle, plain rest.
H 919	Niles 50" pulley lathe, 2 compound carriages.
H 859	Flather 24x16, q. c. g., hollow spindle, compound rest, chuck.
H 1026	Fifield 30x12, hollow spindle, compound rest, raising blocks, chuck.
H 838	Putnam 32½x16, solid spindle, compound rest.

DRILLS.

H 517	Snyder, 25 in. adj. head.	H 915	Niles 5 ft. radial, semi-univ.
H 832	Dwight-Slate 4 spdl. sens.	H 916	Lodge & D. 32 in., adj. hd.
H 864	Quint 6 spindle turret head.	H 926	Niles 4 ft. radial.
H 892	Cincinnati 20 in. lever feed.	H 961	Blaisdell 24 in. adj. head.
H 1011	Sibley 20 in., w. & l. feed.	H 974	Henry & Wright 1 sp. sens.
H 972	Prentice 28 in., geared feed.	H 992	Rockford 24" tp'g. att.
H 1016	Sibley 28 in., sliding head.	H 995	Cincinnati 24" tp g. att.

GRINDERS.

H 889	Yankee style B. capacity ½ to 2½" drills.
H 812	Landis No. 1 universal, range 9x24.
H 811	Brown & Sharpe No. 3 cutter and reamer grinder.
H 976	Besley No. 10 double disc grinder with clamp.
H 802	Cincinnati No. 2 universal tool grinder with 220 v., d. c. motor.

PNEUMATIC TOOLS.

H 605	Albree riveter, 26 in. reach, capacity 1 in. rivets.
H 983	Curtis 13-8x12 compressor, belt drive.
H 857	Allen riveter, 25 in. reach, 15 in. gap, capacity 1½ in. rivet.

MILLING MACHINES.

H 665	Ingersoll, slab 36x36x8.	H 860	Kempsmith No. 8 univ.
H 636	Garvin No. 4 plain, 3 feeds.	H 737	Kempsmith No. 2 plain.
H 658	Lincoln type, 6x26 in.	H 964	Osterlein plain, 34x9x19.
H 1023	Cincinnati No. 4 plain.	H 940	Davis & E., No. 4 univ.

TURRET MACHINERY.

H 958	Cleveland ½ in. automatic screw machine.
H 655	Pratt & Whitney ½ in. hand screw machine.
H 795	Wells No. 140, ½ in. hand screw machine.
H 744	Springfield Fox 18x6, turret on bed.
H 953	Gisholt 21 in. turret, 2 in. hole in spindle.
H 914	Conradson 24-32 turret lathe.

MISCELLANEOUS.

H 918	Boring mill, 60 in. Niles., 2 heads.
H 213	Boring and drilling machine, hor., 4x27x60 in. Beaman & Smith.
H 827	Crane, hand power, 5 ton capacity, 18 ft. span.
H 672	Cutting-off machine, 3 in. Hurlburt & Rogers.
H 913	Cut-off saw, No. 3-B., capacity 20 in. beams.
H 893	Gear cutter, 36 in. Brainard, semi-universal.
H 208	Profiling machine, No. 2 Pratt & Whitney.
H 647	Screw machine, hand, ½ in. Pratt & Whitney.
H 960	Steam hammer, 400 lb. Chambersburg.
H 623	Tapping machine, No. 1 Garvin automatic.

SECOND HAND MACHINERY

FOR SALE BY

Rumely-Wachs Machinery Co., 126 N. Jefferson St., Chicago, Ill.

LATHES.

Jewelers' nickle plated bench lathe.

No. 2 Stark bench lathe.

9" Young, foot power.

11"x36" Rockford.

12"x 5' Davis.

13"x 5' Prentice.

14"x 6' Bogert.

14"x 7' Bogert.

14"x 6' Pratt & Whitney.

15"x 5' Whitcomb Blaisdell.

15"x 6' Walcott.

16"x 6' Porter.

16"x 6' Bogert.

16"x 6' Flather.

16"x 6' Walcott.

16"x 6' LeBlond, taper.

16"x 7' Springfield "Ideal."

16"x 8' Davis, taper.

18"x 8' Flather, plain rest.

18"x 8' Flather, quick change.

18"x 8' Reed.

18"x 8' Walcott.

18"x 8' LeBlond, turret on shear.

18"x10' LeBlond, quick change.

19"x11' Lodge & Davis, taper.

20"x 9' Draper.

20"x10' LeBlond, quick change.

22"x10' Fifield.

22"x10' Gleason.

22"x10' Blaisdell.

24"x 8' Putnam.

24"x12' New Haven.

24"x24' Fifield.

26"x10' Enterprise.

26"x14' Fifield, triple geared.

30"x18' Niles.

36"x12' Schumacher & Boye.

36"x14' Fifield.

36"x14' New Haven.

42"x16' Fitchburg.

UPRIGHT DRILLS

10" Barnes friction drill.

10" sensitive drill.

14" sensitive drill.

2-spindle Barr, sensitive.

3-spindle Reed, sensitive.

4-spindle P. & W., sensitive.

4-spd. Dwight Slate, sensitive.

20" Rockford, wheel and lever.

20" Barnes, wheel and lever.

26" Barnes, sliding head.

26" Bickford, manufacturers' type.

32" Gould & Eberhardt, sliding hd.

36" American, plain radial.

42" Lodge & Davis, sliding head.

SHAPERS.

8"x12" Boynton & Plummer.

12" Springfield.

12" Lodge & Davis.

14"x34" Sellers.

15" Hendey.

15" Gould & Eberhardt.

18" Walcott.

32" Walcott.

PLANERS.

20"x20"x 4' New Haven.

20"x20"x 4' Putnam.

22"x22"x 5' Wheeler.

24"x24"x 6' Whitcomb.

26"x26"x 6' Flather.

26"x26"x 7' Niles.

30"x30"x 8' Putnam.

35"x35"x15' Powell.

MILLING MACHINES.

No. 6 Whitney hand miller.

No. 11 Brown & Sharpe, plain.

No. 1 Cincinnati, plain.

No. 1 Brown & Sharpe, plain.

No. 4 Garvin, plain.

No. 2 Kempsmith, plain.

No. 3 Kempsmith, plain.

No. 3 Newton, plain.

No. 3 Cincinnati, plain.

No. 2 Pratt & Whitney, Lincoln.

PUNCH PRESSES AND SHEARS.

No. 18 Bliss, o. b. l., bench.

No. 24 Consolidated, o. b. l.

No. 1 Bliss, solid back.

No. 2 American Can, solid back.

No. 3 Crosby, solid back.

No. 2 Billings & Spencer trimming press.

Merriam trimming press.

Worm gear power wheel press.

Drombacher hand lever splitting shear.

New Doty No. 4-O hand shear.

No. 4 W.-W. hand punch.

22" Toledo power square shear.

TURRET LATHES AND

No. 1 Pratt & Whitney, wire feed.

No. 2 Pratt & Whitney, wire feed.

No. 2 Bardons & Oliver, auto. chk.

No. 6 Brown & Sharpe, roller feed.

18"x 6' American, Fox monitor.

SCREW MACHINES.

18"x 6' American, square arbor Fox.

18"x 6' Lodge & Davis, turret.

24" Warner & Swasey, univ. turret.

24" Conradson turret lathe.

GRINDERS.

No. 1 LeBlond, univ. cutter & ream.

Greenfield, univ. cutter & reamer.

No. 2 Norton, univ. cutter & reamer.

No. 29 Landis.

No. 6 Blount dry grinder.

24" Barnes wet tool grinder.

No. 7 Hanson Van Winkle buffer.

Washburne, twist drill.

SECOND-HAND MACHINERY

Rumely-Wachs Machinery Co.—Continued.

BORING MILLS.

Niles horizontal, 24" bar.

42" Bullard, two swivel heads.

MISCELLANEOUS.

Centering mch., 2-sp., P. & W.

Cutting-off mch., 4½" P. & W.

Filing machine, bench, small.

Gear cutter, 4½" Dwight Slate.

Pipe machine, 4" Bignall & Keeler.

Pipe machine, 6" Saunders.

FOR SALE BY

The Randle Machinery Co.,

1739 Powers St., Cincinnati, O.

ENGINE LATHES.

18 in. x 8 ft. McFarlan.

16 in. x 8 ft. Steptoe.

17 in. x 12 ft. Greaves-Klusman.

Lathes complete with face plates, chuck, countershafts and all parts.

PLANERS.

36x36x8 ft. Oesterlein, with countershaft and all tools.

1 special planer 47 in. between housings, table 1½ ft. long.

GAS & GASOLINE ENGINES.

25 h. p. Dean.

8 h. p. Springfield.

MOTORS.

All sizes and kinds.

MISCELLANEOUS.

Heaters, tanks, pumps, electrical, saw mill and general machinery, including a complete line of Iron Working Tools. Write for list.

Also a full assortment of new machinery.

Sole manufacturers of the celebrated "Leader" Injectors and Jet Pumps.

BOILERS.

Horiz. tubular, from 36 to 150 h. p.

Fire box, from 8 to 80 h. p.

Vertical, from 3 to 50 h. p.

ENGINES.

Corliss, from 50 to 500 h. p.

Automatic, from 15 to 200 h. p.

Throttling, from 5 to 225 h. p.

ELECTRIC GENERATORS.

120 k. w., belted.

25 k. w., Keystone belted.

20 k. w., direct connected with engine.

18 k. w., belted.

10 k. w., Fairbanks-Morse belted.

25 amp., Roth belted.

FOR SALE BY

Brown-McDonald Machinery Co.,

906-908-910 North Market Street, - - - St. Louis, Mo.

BLOWERS.

14 Blowers, all sizes, including 2 No. 7 Roots rotary.

COMPRESSORS.

6x6 Laidlaw-Dunn-G., horiz., steam.

10x11x12 Franklin, horiz., steam.

DRILLS.

21" Snyder, b. g., p. f., (2).

No. 33 Reed, 3 spindle sensitive.

No. 34 Reed, 4 spindle sensitive.

20 in. Aurora, square base, p. f.

GRINDERS.

10 Emery grinders, all sizes.

LATHES.

14" 16" & 18" New Monarch, (8).

13" x 6' Rockford, comp. rest, hollow spindle, new.

16" x 6' Hamilton.

17" x 8' Fifield.

5 speed lathes.

MILLING MACHINES.

No. 10 Kempsmith, plain.

Cincinnati, slab milling & boring.

PIPE MACHINES.

1" Curtis & Curtis, power.

2½" power.

PUNCH & SHEAR.

No. 6 Long & Allstatter, cap. ½ in. ½, alligator pattern.

SHEARS.

36" Niagara foot pwr. gap sq. shear.

37" Acme, foot power.

MISCELLANEOUS.

Boring mill, 54 in. Powell.

Shaper, 16" Steptoe.

Gear cutter, Brinard.

Large stock of Engines, Boilers, Wood Working Machinery, Pulleys, Shafting, Belting, etc. Can fill all requirements. Write us.

SECOND-HAND MACHINERY

FOR SALE BY

O. L. Packard Machinery Co.,

Milwaukee, Wis.

LATHES.

14"x 6' Blaisdell lathe, solid spindle.....	\$ 165.
14"x 6' Flather, hollow spindle.....	200.
14"x 6' Hamilton, c. r., power cross feed, hollow spindle.....	225.
18"x 6' American, compound rest, hollow spindle.....	250.
28"x 20' Harris lathe.....	300.
16" turret lathe.....	150.
18" Lodge turret lathe, power feed.....	125.
1" screw machine, Dreses, nearly new.....	275.

MISCELLANEOUS.

Drill press, 26" Mechanics, sliding head.....	\$ 125.
Keyseater, No. 2 Mitts & Merrill, modern, in good condition.....	175.
Pipe machine, No. 8 Merrill.....	275.
Planer, 25"x25"x16' Fitchburg.....	450.
Screw machine, 4" Pratt & Whitney.....	375.
Shaper, 2 spindle, wood top.....	55.
Shaper, No. 24 Clement, wood top.....	125.
Shaper, Indiana, 2 spindle, no table.....	70.

FOR SALE BY

A. D. White Machinery Co., 108-114 N. Jefferson St., Chicago

LATHES.

13x5 P. & W., taper and chucks.....	18x8 American, latest pat.
14x5 Reed, taper, 2 chucks.....	20x10 American, q. c., motor drive.
16x6 Flather, 2 chucks.....	22x16 Whitcomb, 3 step cone.
18x8 Schellenbach, q. change.....	24x10 Springfield, chuck.
18x8 Whitcomb-B., s. pulley drive.....	28x14 Fifield.
18x10 Shumacher & Boye.....	32x14 Porter, 20 in. chuck.
18x12 Whitcomb-B., s. pulley drive.....	

DRILLS.

18 in. Blaisdell.....	30 in. Bickford, sliding head.
23 in. Hamilton.....	32 in. Bickford, sliding head.
28 in. Bickford, sliding head, (4).....	32 in. Mechanics, like new.
30 in. Kerkhoff, sliding head.....	3 ft. Bickford radial, cheap.

PLANERS.

24x 6 Pond, 1 head.....	32x 8 Betts, 1 head.
25x 6 Sellers, spiral drive.....	36x12 Cincinnati, 2 heads.
26x 6 Gray, 1 head.....	38x10 Gray, 1 head, fine.
26x 8 Gray, 1 head (2).....	52x25 Betts, 1 head.
28x 8 Gray, 1 head (2).....	

SCREW MACHINES AND TURRET LATHES.

16 in. No. 3 Pearson screw machine.....	7 in. Cleveland, semi automatic.
No. 24 Pratt & Whitney sc. mche.....	3 in. P. & W., automatic.
No. 3 Pratt & Whitney sc. mche.....	13 in. Dreses turret lathe.
7 in. Cleveland, automatic.....	22 in. Gisholt, rapid traverse.
7 in. Pratt & Whitney, automatic (4).....	24 in. Gisholt, rapid traverse.

PUNCH PRESSES.

No. 1 R. & K., o. b. i., (2).....	No. 21 Bliss inclinable; fine.
No. 190 West, open back.....	No. 10 Thiem inclinable.
No. 14 Norton, open back.....	No. 68 N. Bliss, double action.
No. 19 Bliss inc.....	No. 15 Waterbury Farrel, geared.

MISCELLANEOUS.

Boring and facing machine, No. 1 Beaman.....	Hammer, steam drop, 5000 lb. Erie.
Gear hobber, No. 2 S. & S.....	Keyseater, No. 2 Catlin.
Grinder, cutter, H. G. Barr.....	Keyseater, 16 in. Morton.
Hammer, power, 35 lb. Justice.....	Miller, No. 12 Garvin, (3).
Hammer, power, 50 lb. Dienelt.....	Riveters, 7" Adt.
Hammer, drop, 200 lb. Norton.....	Shaper, 14 in. P. & W., univ. vise.
	Shapers, 16 in. Smith & Mills (2).

Did you get our new "Yellow Book"?

SECOND-HAND MACHINERY

FOR SALE BY

Hill, Clarke & Co. of Chicago,

127 N. Canal St., Chicago, Ill.

Our only guarantee on a second-hand machine is: Return it within one month, freight prepaid, and we will refund purchase price in full—can you think of a better guarantee?

LATHES.

13"x 5' Am. Tool & Machine Co.
13"x 6' South Bend.
14"x 6' Bradford.
14"x 6' American.
16"x 6' Hendey. (latest pattern).
18"x 8' Whitcomb-Blaisdell, gd. hd.
18"x 10' Lodge & Shipley.
22"x 12' Flather.
24"x 14' Johnson.
26"x 8' Flather.

26"x 12' Draper.
28"x 11' Blaisdell.
30"x 27' New Haven.
32"x 16' New Haven.
36"x 12' Fitchburg.
42"x 12' Putnam.
46"x 16' Putnam.
60"x 16 1/2' Fitchburg.
62" New Haven.

TURRET LATHES AND SCREW MACHINES.

6 1/2"x 16" Potter & Johnson.
3"x 36" Jones & Lamson.
2"x 24" Jones & Lamson.
24"x 10" Conradson semi-automatic.
22" Steinhilber, turret.
18"x 6" No. 2 American cabinet.

No. 8-2" Bardons & Oliver.
2"x 24" Warner & Swasey.
14" Wood, tilted turret.
1" Wood, tilted turret.
4" Wood, tilted turret.
No. 0 Brown & Sharpe, full auto.

DRILLING AND BORING MACHINES.

No. 5 Binsse horizontal boring.
32" Niles vertical boring.
24" Universal horizontal boring.
No. 2 Western multiple drill.
5' Baush radial.
4' Dreses radial.
No. 2 1/2 4' Gang, plain radial.
25" Barnes, stationary head.
24" Hoefer, stationary head.
No. 1-A Henry & Wright, sensitive.

No. 23 Allen high spd., ball bearing.
24" Sibley, stationary head.
22 1/2" Sibley, stationary head.
20" Mechanics, friction.
20" Baker Bros., upright.
16" W. F. & John Barnes, upright.
14" Woodward & Rogers, sensitive.
2-spd. Barr, sensitive.
14" Barr, sensitive.

SHAPERS AND PLANERS.

13" Hendey, friction.
16" Garvin, crank.
20" Ohio, geared.
18" Hendey, with tilting table.
28" Ohio, triple geared.
22"x 22"x 6' Gray, spur geared.
22"x 22"x 5' Powell, spur geared.

24"x 24"x 8' Cincinnati, spur geared.
24" Peirick & Ayer, open side.
28"x 28"x 6' Gray, spur geared.
30"x 30"x 6' Pease, spur geared.
36"x 36"x 14' Cincinnati, 2 heads.
40"x 40"x 12' New Haven, 2 heads.
48"x 48"x 13' Pond planer, 2 heads.

GRINDERS.

14"x 52" Norton, plain.
10"x 30" Landis, cam shaft.
No. 24 Bath, universal.
No. 2 18" Gardner, disc.
No. 2 Brown & Sharpe, universal.

No. 2 Brown & Sharpe, cutter.
No. 2 Diamond automatic cup wheel.
No. 1 Morse, plain.
No. 200 Heald, piston ring.

MILLERS AND GEAR CUTTERS.

No. 3 Cincinnati, cone drive.
No. 4 Cincinnati, geared head.
No. 7 Becker-Brainard, Lincoln type.
No. 3 Becker-Brainard, plain.
No. 28 Brainard, plain.
No. 12 Brown & Sharpe.
No. 1 Garvin, plain.
No. 12 Garvin, plain.

Pratt & Whitney, small.
No. 2 Garvin, hand.
No. 3 Carter & Hakes.
No. 1 Chicago.
No. 1 Mossburg & Granville.
Chicago, bench.
30" Flather automatic gear cutter.
No. 3 Eberhardt Bros., gear cutter.
No. 1 Pfauter gear hobber.

PUNCH PRESSES.

No. 66 Crosby, arch.
No. 18 Crosby, open back, inc.
No. P4 Ferracut, punch.
No. 3 Philadelphia.
No. 1 Philadelphia.
No. 1 Faulkenau & Sinclair.

No. 1 1/2 Bliss, screw.
No. 0 Stiles.
No. 81 Consolidated, bench.
Straight sided single crank.
No. 10 Stiles, inclinable.

SECOND-HAND MACHINERY

FOR SALE BY

Brown & Zortman Machinery Co., 2535 Liberty Ave., Pittsburg, Pa.

LATHES.

2x24 in. Jones & Lamson.
18 in. American Tool & Machine
brass lathes, (2).
21 in. x 8 ft. New Haven.
60 in. x 18 ft. New Haven, with 14 ft.
extension, triple geared.

PLANERS AND SHAPERS.

70x30x12 Sellers planer.
42x42x18 Betts planer.
84x84x14 Niles planer, 3 heads.
26x26x6 Lodge & Davis planer.
26 in. Cincinnati back geared shaper.
24 in. Juengst shapers, (2).
26 in. Kelly shaper.
28 in. Juengst shaper.
30 in. Morton draw cut shaper.

RADIAL DRILLS.

No. 1 Bickford, plain.
30 in. Mueller, plain.

MISCELLANEOUS.

Grinder, universal, No. 2 Diamond.
Grinder, universal, No. 2 Landis.
Pulley boring machine, 50 in. Niles.

FOR SALE BY

Frank Toomey, Inc.,

127 N. Third St., Philadelphia, Pa.

LATHES.

56"x30' Baker, blocked to 63".
42"x20' Pond.
36"x16' Niles.
36"x14' Pond.
30"x22' Bement-Miles.
30"x18' Bement-Miles.
28"x16' Fifield.
27"x21' Pratt & Whitney, taper att.
27-54"x21' McCabe double spindle
lathe and chuck.
26"x17' Johnson, taper attachment.
22"x18' Harrington.
22"x12' Pond.
21' x 9' Lodge & Davis.
20"x 8' Fay & Scott, universal, (2).
18"x10' Draper.
18"x 8' Bradford.
18"x 8' Reed.
16"x12' American.
16"x 6' Flatler.
16"x 6' Fitchburg.
12"x 6' Hendey-Norton, pan bed
and collets.
6" Rivet lathe, all attachments.

PLANERS.

60"x60"x14' Pond, two heads.
26" widened to 35"x 8' Hendey.
33"x33"x12' Woodward & Powell.
30"x30"x 8' Dietrich & H., open side.
28"x28"x 7' New Haven.
22"x22"x 6' Powell, two heads.
12" Moore crank planer.

SHAPERS.

14x24" Fitchburg, traveling head.
13x22" traveling hd., English pattern.
12" Bement.

RADIAL DRILLS AND DRILL PRESSES.

28" Superior, sliding head.
24" Barnes, sliding head.
23" Barnes, stationary head.

MILLING MACHINES.

36"x12' slab, heavy pattern.
No. 3 Pedrick & Ayer universal,
33" table.
No. 3 Becker Brain'd pl., table 12x42.
No. 1 Brainard plain, table 12x48.
No. 22 Garvin, vertical.
No. 1 Van Norman duplex, table 2d
Pratt & Whitney plain, table 55x35.

MISCELLANEOUS.

Bolt cutter, 14" National.
Boring mill, vert., 36" Bridgeport.
Boring mill, horiz., 48" Bement.
Broaching mach., No. 2 LaPointe.
Grinder, universal, No. 2 Brown &
Shafer.
Grinding planer, 22"x22"x5' Spring-
field.
Hammer, steam, single frame, 400-
lb., Chambersburg.
Hammer, board drop, 500 lb., Pratt
& Whitney.
Pipe machine, 8" Saunders.
Dynamos, motors, engines and boilers.
Internal grinding lathe, 16"x 8'
Diamond.
Pipe machines, 3" and 6" Curtis &
Curtis, hand power, (2).
Pulley boring machine, 60" Har-
rington, upright.
Punch and shear, double end, No. 2
Roversford.
Punch and shear, dbl. end, Sellers,
30" throat, 14" cap., wt. 35,000 lbs.
Shear, single end, 50" throat, 3"
capacity, engine driven.
Turret lathe, No. 6 Brown & S.
Wood-working machines both new
and second-hand. Send for our stock
books.

SECOND-HAND MACHINERY

FOR SALE BY

E. G. Eldridge Machinery Co., 29-31 N. Jefferson St., Chicago, Ill.

High Quality and Low Prices on the following—satisfaction guaranteed.

DRILL PRESSES.

Perry bench drill, $\frac{1}{2}$ " cap.
10" Stecher, b. b., h. s., $\frac{1}{2}$ " cap.
13" No. 150 Rockford, $\frac{1}{2}$ " cap., new.
12" Mechanics drill.
20" Milwaukee plain sens., new.
20" Milwaukee w. & l. feed, new.
20" Milwaukee w. & l. and b. g., new.
20" Rockwell, b. g., p. f., new.

21" Fosdick, w. & l.
28" Blaisdell, b. g. & p. f., sliding hd.
25" Barnes, b. g., p. f., fixed head.
24" Milwaukee, b. g., p. f., sliding head, new.
No. 3 Garvin 4-spindle gang.
3-spdl. Baker heavy duty gang.
6' Pond plain radial, b. g., p. f.

ENGINE LATHES.

9"x24" Rockford.
11"x36" Rockford.
13-22x54" Barnes, gap.
14"x 8' Lodge & Davis, with taper.
14"x 6' Monarch, standard.
14"x 6' Monarch, s. b. g., sec. hand.
14"x 6' Monarch, d. b. g., sec. hand.
14"x 8' Monarch, s. b. g., new.
16"x 8' Monarch, s. b. g., new.
18"x 8' Monarch, s. b. g., new.
18"x 8' Monarch, q. c. g., 3-step cone, new.

18"x10' Monarch, s. b. g., new.
16"x 8' Advance, d. b. g., new.
18"x 8' Draper, s. b. g.
18"x 8' Schellenbach, d. b. g., swing 20".
22"x10' Schumacher & Boye, b. g.
25"x12' Blaisdell, b. g.
24"x10' Pond, s. b. g.
28"x12' New Haven, s. b. g.
30"x16' Niles, s. b. g.
36"x12' Niles, s. b. g.

MILLING MACHINES.

No. 2 P. & W., b. g., Lincoln type.
No. 3 P. & W., b. g., horizontal.
No. 4 Garvin, 3-step cone.
No. 2 Brainard, b. g., with universal dividing head.

Small power feed hand miller.
No. 1 Owen, univ., p. f., new.
No. 2 Owen, univ., p. f., new.
No. 3 Owen, univ., p. f., new.
No. 2 Owen, b. g., plain, new.

All sorts of attachments and small tool equipments.

PLANERS.

22"x22"x5' Pond, 1 head.

24"x24"x6' Pease, 1 head.

PUNCH PRESSES.

Nos. 1, 2 & 3 Rockford, o. b. i., new.
No. 1 K. & K., o. b. i.
No. 3 R. & K., dbl. action, o. b. i.
No. 3 Hoeft, o. b. i.
No. 3-P R. & K., solid back.

No. 18 Bliss, o. b. i., with cam operating horiz. slide.
R. & K. hand screw press.
No. 2 Cincinnati punch and shear.
No. 754 Bliss s. s., geared.

SHAPERS.

14" Rockford, s. g., new.
15" Hendey, belted, gear.
16" Rockford, s. g.

16" Rockford, b. g.
16" Ohio, s. g.

TURRET LATHES & SCREW MACHINES.

No. 2 B. & O., 1", hand, new.
14" Gridley automatic, 4 spindle.
4" Gridley automatic, 4 spindle.

15"x6' Dreeses univ., Fox Monitor.
24"x8' American univ., Fox Monitor.
2" W. & S. cutting-off machine.

BORING MILLS.

Type "D" Newark horizontal and universal.
72" Bullard, vertical, 2 swivel heads.

MISCELLANEOUS.

Bolt cutter, single spindle, 2" Acme style A.

Crane, portable, 1-ton, Hercules.

Fan, No. 3 Buffalo, 7" outlet.

Gas furnace, American.

Gear shaper, 24" Fellows.

Grinder, oscillating surface, 20"x5' Springfield, planer type.

Grinder, twist drill, 14" cap., Wilmarth & Morman style "A."

Metal melter, Walker, non-oxydizing, cap. 11" diam.

Motors, 10 h. p., 800 r. p. m., 230 v., d. c. with starting boxes.

Pinion cutter, 12" cap., Dwight Slate, spur gears

Rivet spinning machines, Grant, all sizes.

Safe, combination lock, about 6' high, 8' wide and 3' deep.

Wire straightener and cutting-off machine, 3-16" Shuster, Adt model, new.

Many other machines and small tools, new and second hand. Write for new list just out. Will buy your machinery or entire plant.

SECOND-HAND MACHINERY

FOR SALE BY

Enterprise Machy. Co., 521 Monroe St., Phone Main 1295, Chicago

Band resaw, \$500; cir., 59".....\$ 185.	Lathe, 2x24" J. & L., turret...\$ 700.
Boring mill, 42" Bullard.	Paper knife grinder, 52" auto.... 125.
Box nailer, 8-nail, Doig..... 185.	Planer, 24"x5', heavy..... 325.
Drill, b. g., 38", \$150; 24"..... 150.	Planer, 30"x8'..... 325.
Drills, 3 sp., \$45., \$60. and..... 70.	Punch, b. g., $\frac{1}{2}$ in $\frac{1}{2}$, \$125; $\frac{3}{4}$ in $\frac{1}{2}$.. 285.
Grinder, auto., edge, cost \$350.. 125.	Punch, R. & K. No. 3, \$164; 2.. 135.
Grinder, paper knife, 52" auto., 125.	Radial drill, 54" Bickford.
Lathe, 13"x5', c. r. & \$50. tools.. 100.	Shapers, crank, 20", \$295; 14".... 195.
Lathe, 16"x8' Bogart, h. s., ck.... 165.	Toggle press, 34" Bliss, 12".... 850.

And 500 more machines. See Cylinder Grinder ad., this issue.

FOR SALE BY

A. O. Walworth & Co., - - 28 S. Clinton St., Chicago, Ill.

LATHES.

14"x 6' Lodge & Davis, comp. rest.	32"x14' Putnam, c. r., rod feed.
18"x 8' Bradford, plain rest.	35"x13' Fifield, plain rest.
24"x15' New Haven, comp. rest.	37"x20' Putnam, plain rest.
28"x11' Columbia, plain rest.	40"x14' Putnam, p. r., raised to 48"
30"x12' New Haven, plain rest.	40"x18' Fifield, triple geared, new.
30"x18' New Haven, comp. rest.	60"x18' Fifield, triple geared, new.

PLANERS.

22"x22"x 4' New Haven.	36"x36"x 8' Putnam.
30"x24"x 8' Putnam.	72"x42"x26' Columbia.

SCREW MACHINES AND TURRET LATHES.

No. 2 B. & O., auto. chuck.	42" New Haven, power feeds, b. g.
No. 2 Dreses, 1" auto. chuck.	No. 2 Niles Tool Wks., power feed.
No. 4 Brown & Sharpe.	24" Lodge & Shipley, bk. geared.
16" Pratt & W., dbl. back gear.	Nos. 1, 2 & 3 P. W. auto. screw mchs.
No. 3 Garvin, back gear.	$\frac{3}{4}$ " to 2" Cleveland auto. screw mchs.

MILLING MACHINES.

No. 24 Brown & S., plain, 6' table.	No. 28 Osterlein.
No. 2 Garvin, universal.	No. 2 Thurston die miller.
No. 1 Pratt & Whitney, plain.	No. 4 Hillis & Jones vertical miller.

AUTOMATIC GEAR CUTTERS.

36" Gould & Eberhardt, spur.	26" Brown & S., spur and bevel.
30" Gould & Eberhardt, spur.	22" Gould & Eberhardt, spur.

POWER PRESSES AND PUNCHES.

No. 35 Consolidated, geared.	No. 5 Ferracute.
No. 42 Toledo horn press.	No. 17 W. & W. double end punch
Horiz. punch for boiler works.	No. 2 L. & A. punch & shear.
No. 2 Ferracute.	36" multiple punch, geared.

MISCELLANEOUS.

Axle lathe, double, Niles.	Hammer, drop, 100 lb. Bliss.
Bolt header, 1 in. Acme.	Hammer, drop, 1,000 lbs. P. & W.
Bolt header, $\frac{1}{2}$ " National.	Keyseaters, Nos. 1, 2 & 3 Morton.
Car boring machine, 42" Bement.	Locomotive cylinder boring machine, Sellers.
Corliss cylinder boring mch., 48".	Metal band saw, 34" P. & W.
Corncr brake, 8' Robinson.	Rack cutter, P. & W.
Drill, 42" Blaisdell, sliding head.	Radial drill, 54" Bickford.
Drills, Style F Baker.	Swaging machine, No. 34 Dayton.
Forging rolls, W. & W. No. 1 taper.	Tapping machine, No. 2 Garvin.
Gate shear and punch, 36".	
Grinder, triple disc, No. 6 Besly.	

Send for list of 500 other tools. We own the largest stock of second-hand machine tools in the West. We have in stock all machines advertised.

SECOND-HAND MACHINERY

FOR SALE BY

Prentiss Tool & Supply Co., New York, Boston, Buffalo, Syracuse.

BORING MILLS.

- | | |
|------------------------------------|----------------------------------|
| 24" bar Bement, horizontal. | 3" Lucas, horizontal. |
| 2 spindle Foote-Burt, cylinder. | 51" Bement-Miles, vertical. |
| 8" bar Beaman & Smith, horizontal. | 42" Rogers, vertical, two heads. |

DRILLS.

- | | |
|---------------------------------------|------------------------------------|
| 42" Gang, plain radial. | Style F Baker Bros., heavy. |
| 26" 48" and 60" Bickford pl. radials. | 7-spindle Slate, gang. |
| 21" and 30" Snyder sliding head. | Foote-Burt, high speed. |
| 3-spindle 20" Barnes, gang. | 6 and 10-spindle Gardam, multiple. |

GRINDERS.

- | | |
|------------------------------------|------------------------------|
| Pratt & Whitney, vertical surface. | No. 2 Cincinnati, universal. |
| Walker automatic, surface. | 10" x 36" Landis, universal. |
| No. 11 Landis, plain. | No. 6 Rivett, internal. |

MILLERS.

- | | |
|--------------------------------------|---------------------------------|
| Nos. 1, 2 & 3 Cincinnati, universal. | No. 64 Becker, Lincoln. |
| No. 5H Becker, horizontal. | No. 12 Brown & Sharpe, plain. |
| No. 9 Kempsmith, plain. | 8" Beaman & Smith, planer type. |

LATHES.

- | | |
|--|---|
| 12" x 4' Hendey, r. & f. | 28" x 12' Putnam, c. r., p. c. f., taper. |
| 14" x 5' Hendey, c. r. | 30" x 16" Fay & Scott, c. r., p. c. f. |
| 16" x 8' Porter, c. r., p. c. f. | 32" x 12' Johnson, c. r., p. c. f. |
| 16" x 8' Prentice, c. r., p. c. f. | 38" x 20" Fay & Scott, c. r., p. c. f. |
| 16" x 10' Hendey, c. r., p. c. f. | 40" x 18" Newark, c. r., p. c. f. |
| 18" x 8' Lodge & Shipley, pat. hd. | 84" x 20" Fitchburg, triple geared. |
| 18" x 8' Reed, c. r., p. c. f. | 16-32" x 8' Fay & Scott, gap. |
| 18" x 14' Flather, c. r., p. c. f., taper. | 20-42" x 12' Fay & Scott, gap. |
| 20" x 10' Draper, c. r., p. c. f. | 32" x 18" column facing lathe. |
| 22" x 10' Bullard, c. r., p. c. f. | 16" x 10' automatic threading |
| 24" x 12' Putnam, c. r., p. c. f. | 60" Stevens, pulley. |
| 24" x 12' Reed, c. r., p. c. f. | 11" x 4' Wells, speed. |
| 26" x 18" Pond, c. r., p. c. f. | 14" x 5' American, Fox. |
| 27" x 12' Pratt & Whitney, c. r., p. c. f. | |

PLANERS.

- | | |
|----------------------------------|---------------------------------------|
| 15" x 15" x 3' Pratt & Whitney. | 42" x 42" x 14' Pond, 2 heads. |
| 24" x 24" x 6' Wilson, 1 head. | 42" x 42" x 14' Woodward & P., 4 hds. |
| 26" x 26" x 6' Wheeler, 1 head. | 52" x 42" x 12' Cincinnati. |
| 30" x 30" x 8' Powell, 1 head. | 60" x 60" x 15' Sellers. |
| 30" x 30" x 10' Bement, 2 heads. | 66" x 66" x 12' Bement, 2 heads. |
| 36" x 36" x 12' Lodge & Davis. | 71" x 60" x 14' Pond.. |

HAMMERS.

- | | |
|-----------------------|---------------------------------|
| 25 lb. Dupont, trip. | 40 lb., helve. |
| 50 lb. Bradley, trip. | 1000 lb. Pratt & Whitney, drop. |

PRESSES.

- | | |
|------------------------------|---------------------------------|
| No. 744 Bliss, geared. | Nos. 1 & 2 Hibbard, inclinable. |
| No. 2 Stiles, punching type. | D. G. 74 Ferracute. |

SCREW MACHINES.

- | | |
|---|---------------------------|
| 2" x 24" and 3" x 36" Jones & Lamson. | 24" American, heavy. |
| 14" x 18" and 3" x 36" Pratt & Whitney. | 22" Bullard, heavy. |
| No. 4 Garvin wire feed, f. b. g. | 24" Gridley, 1-spindle. |
| 1" Warner & Swasey, wire feed. | 4" 1 and 12" Hartford. |
| No. 6 Warner & Swasey, wire feed. | 4" Pratt & Whitney, auto. |
| No. 2 Pratt & Whitney, wire feed. | 4" Brown & Sharpe, auto. |

SHAPERS.

- | | |
|-------------------------------|--------------------|
| 14" Lodge & Davis, crank. | 15" Ohio, crank. |
| 15" Gould & Eberhardt, motor. | 20" Kelley, crank. |

MISCELLANEOUS.

- | | |
|---------------------------------|---------------------------------|
| Automatic pinion cutter, Slate. | Pipe machine, 3" Jarecki. |
| Bending rolls, 8', 4" cap. | Plate planer, 19". |
| Cold saw, 9" Espen Lucas. | Punch and shear, double end, 1' |
| Dynamometer, 40 h. p. Sprague. | throat, Bremer. |
| Gas engine, 6 h. p. Otto. | Slotter, 10" Putnam. |
| Gear cutter, 24" G. & E. | Slotter, 15" Dill. |
| Keyseaters, Nos. 2 and 3 Giant. | Tumbler, 30" x 24" Smith. |

SECOND-HAND MACHINERY

FOR SALE BY

Chas. Molitor Machinery Co.,

215 S. Clinton St. Chicago, Ill.

Air compressors.
Air riveters and presses.
Beam shear.
Bolt and pipe threaders.
Car wheel boring machine, 50"
Circle shear, 48" Niagara.
Crane derricks.
Drill press, 3 spindle, heavy.
Gap shear.
Grinder, disc, 18", modern.

Grinder, universal, No. 1 B. & S.
Hammers, drop and trip.
Lathe, 24"x8" Lodge & Shipley.
Miller, No. 6 Garvin.
Nut tappers, 6-spdl., modern, (2).
Punch press, geared, No. 5 Am. Can.
Punches and shears, heavy.
Screw machine, 1 1/2" P. & W., latest
Wire straightener and cutter, F
Shuster automatic.

100 other iron and woodworking machines, motors, etc., etc.

FOR SALE BY

McCoy & Brandt,

410 House Building, Pittsburg, Pa.

Boiler, 70 h. p. Erie City "Economic."
Boilers, water tube, 275 h. p. Cahall.
Bolt cutter, 2" Acme.
Bolt cutter, 3" Acme.
Compressor, 9"x10"x9" Duplex
Clayton, 265 cu. ft.
Compressor, 14"x16" and 10"x16"
Sullivan 2 stage straight line, class
WB-2, 558 cu. ft.
Compressor, 20"x20" and 12 1/2"x24"
Norwalk, 960 cu. ft.
Compressor, 22"x22" and 13 1/2"x24"
Norwalk, 1160 cu. ft.
Drill, sensitive, 3 spindle Gardam.
Generator, 100 k. w. G. E. 250 volt.
d. c., 650 r. p. m.

Generator, 150 k. w. Westinghouse
type M, 650 r. p. m., 250 v., d. c.
Generator, 150 k. w. Westinghouse
550 v., d. c., direct connected to 250-
h. p. Buckeye heavy duty piston
valve engine.
Planer, 42"xx42"x15' New Haven.
Press, No. 34 Bliss special.
Shaper, 10" Putnam, traverse head.
Shaper, crank, 18" Lodge & Davis.
Speed lathe, 12"x5' Blount, 6-tool
turret.
Turret lathe, No. 4 Jones & Lamson.
Turret lathe, No. 2 Warner & S.
1 1/2" h. s.
Turret lathe, 17" Pratt & Whitney.
1 1/2" h. s.

FOR SALE BY

Stiles-Morse Co.,

565 W. Washington Blvd., Chicago, Ill.

NEW LATHES.

16"x 8" "A" q. c. gr., Rahn-Larmon.
16"x14" "A" plain, Rahn-Larmon.
18"x 6" "A" 25" gap, Rahn-Larmon.
18"x 8" "A" 25" gap, Rahn-Larmon.
18"x10" "A" plain, Rahn-Larmon.
20"x 8" "A" plain, Rahn-Larmon.
20"x10" "A" plain, Rahn-Larmon.

20"x10" "A" gap, Rahn-Larmon.
24-48"x10" extension bed, gap, Rahn-
Larmon, 8 centers.
24-48"x12" extension bed, gap, Rahn-
Larmon, 11 centers.
Nos. 4, 5 and 6 Bliss spinning lathes.

NEW BLISS

4 Assortments foot presses.
No. 8 open back, bench.
No. 11 open back, bench.
No. 18 open back, inclined.
No. 18C open back, inclined.
No. 19 open back, inclined.
No. 19 1/2 open back, inclined.
No. 20 open back, inclined.
No. 68C double action cam drawing
press.
No. 68N double action cam drawing
press.

PRESSES.

No. 16 horn press, adjustable slid-
ing table.
No. 16 1/2 horn press.
No. 0 Stiles, solid back.
No. 1 Stiles, solid back.
No. 2 Stiles, solid back.
No. 2B Stiles, solid back.
No. 4 Stiles, solid back.
No. 29 arch press, 24" between up-
rights.
30" Bliss new square shear.

MISCELLANEOUS, SECOND-HAND.

Flywheel press, No. 75 1/2 Bliss,
straight sided, nearly new.
Metal pattern lathe, 14x6, back gd.,
compound rest.

Planer, 30x30x10, one head.
Square shear, 22" Niagara foot
power.
Turret lathe, 21" Gisholt.

SECOND-HAND MACHINERY

FOR SALE BY

The Motch & Merryweather Machinery Company,

707-715 Lakeside Av., N. W.,

Cleveland, Ohio

Branches: Detroit, Cincinnati, Pittsburgh.

Below we give a partial list of machinery in stock. Our latest illustrated issue of "Machine Tools" giving a complete description of our stock may be had for the asking. We buy only the best. Delivery is immediate.

BORING MILLS.

- 72" Pond, very good condition.
- 42" Bullard rapid production, double head, A1.
- 42" Bullard, swivel turret head and plain head, very good.
- 51" Bullard double swivel turret head, A1.
- 24" bar Binsse horizontal boring machine, good as new.
- 4" bar Bement-Miles horizontal, very good condition.
- 2" Lucas cone drive column type horizontal.

DRILL PRESSES.

- 21" Davis bk. grd. power fd. good.
- 3 spdl. Rockford 20", back geared, power feed, first class.
- 28" Rockford, sl. hd., good as new.
- 8-spindle Gardam, good, belt drive.

DRILLS-RADIAL.

- 36" Dreeses, latest model, swivel table, gr. drive, first class condition.
- 4" Prentice, cone dr., good condition.
- 4" Fosdick, with 5 ft. arm, tapping attach., first class, gear box drive.
- 5" Pond (2), in very good condition.

GRINDERS.

- No. 60 Heald cyl. grinder, first class.
- 10"x66" Landis, plain, very good.
- No. 14 Landis, internal, very good.
- No. 3 Landis, universal, very good.
- No. 3 Landis, plain, very good.
- 21"x96" Landis univ. first class cond.
- 18"x96" Norton plain, latest design, first class, arranged for motor dr.

GEAR CUTTERS.

- 36" G. & E., spur and bevel, very good condition.
- No. 2 Dwight Slate, cap. 8"x4", 12 d.p.
- 26" Brown & S., very good cond., (2).
- 48" Gould & E., first class condition.
- 64" Gould & E., very good condition.
- 40" Flather, first class condition.
- 20"x8"x5" d.p. Rehanania, first class.

LATHES.

All sizes from 10 in. to 60 in. swing always in stock.

PLANERS.

- 15" Bush crank planer.
- 22"x22"x6" Gray, sgle. hd., first class.
- 24"x24" Powell, sgle. hd., gd. as new.
- 26" New Haven single head, good.
- 26" Gray, single head, first class.
- 36"x36"x8" Sellers, sgl. hd., good.
- 48"x48"x16" Detrick & Harvey, open-side, two heads, first class.

MILLING MACHINES.

- No. 2 B. & S. plain, first class.
- 24"x8" Ingersoll slab miller.
- No. 3 B. & S. plain, very good.
- No. 3 Cincinnati, pl., belt fd., good.
- Garvin & Fitchburgh pl. Lincoln type, good.

SHAPERS.

- 16" Flather, gear box drive, down feed to head, first class.
- 20" Queen City, bk. gd., first class.
- 24" Hendey, later type, very good.
- 24" G. & E., b. g. crank, very good.
- 26" Cincinnati, shifting belt.
- 26" Queen City, back geared crank, good as new.

TURRET LATHES AND SCREW MACHINES.

- No. 2 Bardons & Oliver, very good.
- No. 4 Pratt & Whitney, double back geared, fair condition.
- 2"x24" Jones & Lamson, sliding head, very good condition.
- No. 4 B. & O. swings 18", cross feed to turret, first class.
- 21" Gisholt, one latest model, excellent; one old type, very good.
- 24" Gisholt turret lathe, late type, first class.
- 24"x24" Davis chucking machine, first class.
- 24"x10" Lodge & Shipley screw machine, very good.

MISCELLANEOUS.

- Bolt cutter, 2-spdl. 2" Acme, complete, late type, first class cond.
- Bolt cutter, 1" Wells, good as new.
- Hammer, power helve, 25 lb. Bradley, good as new.
- Pipe mach., 6" Saunders, good as new.
- Pipe machine, 12" Curtis, first-class.
- Punch and shear, hand.
- Planer, portable, 40" stroke, Morton, very good.
- Punch and shear, 1"x1½"x12" throat, Cleveland.
- Tapper, Pratt & Whitney, good.
- Tire welding hammer, Williams-W.

SECOND-HAND MACHINERY

FOR SALE BY

C. C. Wormer Mach'yry Co., 94-96 W. Woodbridge St., Detroit, Mich.

Send for our No. 97 Catalog.

ENGINE LATHES.

12"x 4' Dexter.
12"x 5' Reed.
14"x 6' Lodge & Davis.
15"x 6' Blaisdell.
15"x 6' Flather.
16"x 6' Pratt & Whitney.
16"x 6' Porter.
16"x 6' LeBlond.

18"x 8' New Haven.
18"x 8' Whitcomb.
19"x 6' Pond.
21"x 11' Lodge & Davis.
22"x 8' Fiheld.
22"x 16' Putnam.
26"x 16' Schumacher & Boye.
28"x 10' Hamilton.

SCREW MACHINES.

1" Cleveland automatic.
3" Cleveland automatic.
6" Cleveland automatic.
No. 1 Hartford automatic.
No. 3 Hartford automatic.

No. 2 Brown & Sharpe automatic.
No. 1 Brown & Sharpe, semi-auto.
No. 2 Pratt & Whitney, plain.
No. 1 American valve miller.
16" Garvin, friction.

TURRET LATHES.

18" American bk. gd. Fox.
21" Lodge & Davis.
20" Star Tool Co.
22" Gisholt.
24" Gisholt.

24" Davis.
No. 1 American, square arbor Fox.
No. 2 American, universal.
No. 2 Jones & Lamson.
No. 4 Bardens & Oliver, plain.

MILLING MACHINES.

No. 59 Bement & Dougherty, plain.
No. 2 Davis & Egan, plain.
No. 14 Grand Rapids, plain.

No. 2 Cincinnati, plain.
No. 1 Grand Rapids, plain.
No. 6 LeBlond, plain.

PLANERS.

10"x 10"x 30" Federal, bench.
17"x 17"x 4' Whitcomb.
20"x 19"x 4' New Haven.
20"x 20"x 4' Wheeler.

22"x 22"x 5' Pond.
24"x 24"x 6' Hendy.
24"x 24"x 6' Flather.
24"x 24"x 7' New Haven.

SPEED LATHES.

11'x 4' Blount.
11'x 4' Weils.

12"x 5' speed lathe, hollow spindle.
13"x 4' Garvin.

AIR COMPRESSORS—Belt Driven.

6x6 Snyder-Hughes.
6x6 Curtis.

6x 9 Clayton.
12x12 Laidlaw-Dunn.

AUTOMATIC ENGINES.

8x 8 Buffalo, c. c.
8x10 Ideal, c. c.

8x10 Jewel, s. c.
9x14 Atlas, s. c.

KEYSEATERS.

No. 0 Mitts & Merrill.
No. 2 Mitts & Merrill.

No. 1 Davis.
No. 2 Mitts & Merrill.

HAMMERS.

75 lb. Bradley, strap.
100 lb. Scranton.
125 lb. Bradley, strap.
150 lb. Marchand & Morgan, steam.

400 lb. Erie, steam.
1000 lb. board lift drop.
2000 lb. Bliss, board lift.

MISCELLANEOUS.

Air hoist, 7 1/2"x 2' 2".
Air hoist, 7 1/2"x 4' 9".
Air hoist, 8 1/2"x 4' 8 1/2".
Beader, No. 1-A P. S. & W.
Boring mill, No. 0 Barrett.
Cold saw, No. 5 Cochrane-Bly.
Cutting-off mch., No. 2 Hurlburt & R.
Cutting-off mch., No. 4 Hurlburt & R.
Feed mill, 3-roll Monitor.
Grinder, disc, No. 14 Gardner.
Grinder, wet, No. 2 Diamond.
Grinder, double end, No. 12 Norton.
Groover, 36" No. 3 Niagara.
Groover, 36" P. S. & W.
Hopper scales, 30,000 lb. Fairbanks.

Hot air pumping engine, No. 1 Economy.
Oil tank, 120 gal., Bowser.
Pipe tolder, 30" Niagara.
Press, No. 2 Stiles & Parker.
Press, No. 31 Toledo.
Press, o. b. l., No. 5 Eaton.
Press, o. b. l., No. 119 Standard.
Press, foot, No. 2 Niagara.
Rivet spinner, No. 80 Grant.
Slip rolls, 3x36 Niagara.
Typewriter, Smith-Premier.
Typewriter, No. 6 Williams.
Wheel balancing machine, No. 6 Defiance.

SECOND-HAND MACHINERY

FOR SALE BY

Wm. C. Johnson & Sons Machinery Co.,

210-212 Washington Ave.

St. Louis, Mo.

LATHES.

18"x 8' Hamilton.
22"x12' American.
22"x16' American, quick change.
26"x15' Pond.

32"x20' American.
44"x16' American.
60"x25' New Haven.

PLANERS.

16"x16"x18" crank planer.
26"x26"x 7' Niles.
26"x26"x 8' Lodge & Davis.

36"x36"x10' American.
60"x60"x14' New Haven.

DRILLS.

4' arm Fosdick radial.
60" Bickford, goose neck.
24" American, sliding head.

28" American, sliding head.
32" American, sliding head.

AIR COMPRESSORS.

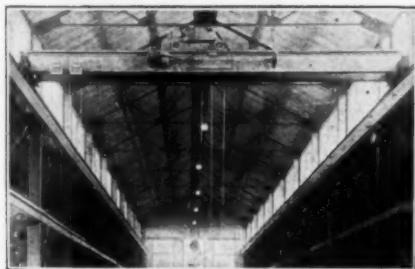
8 x 8 belted.
10x12 belted.
8x 8x 8 steam driven.

10x10x10 steam driven.
960 cu. ft. Norwalk.

MISCELLANEOUS.

Bolt cutter, 3", quick opening head.
Hammer, 80-lb. Veakley.
Hammer, drop, 200-lb. Mossburg & Granville.
Turret lathe, No. 2 Bardons & O.
Turret lathe, 24" Gisholt.

Keyseater, No. 6 Morton.
Punch, 23" throat, Pels, 1" in 4".
Saw, No. 16 Higley.
Screw machine, 1" Cleveland auto.
Screw machine, 11-16" P. & W. auto.
Slotter, 16" New Haven.



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do not require an operator in constant attendance and are frequently as well or better adapted for handling material than the more expensive cab operated.

We make all types of overhead cranes and hoists.

The Euclid Crane & Hoist Company
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make ideal benching, because it costs less to install and it is better benching after it is installed—costs less in the first place, costs less in the last place, and provides the workmen with rigid, solid benches. In addition to this combination of economy and efficiency, the "New Britain" system of benching is built in separate units, independent of wall support, so that it is easily moved about.

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